Building Services Engineering

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Article 1

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building services engineering

BACS key to EPBD revision

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Answer to droplet transmission

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Noise in HVAC systems

Glen Plunkett

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Blowin' in the wind

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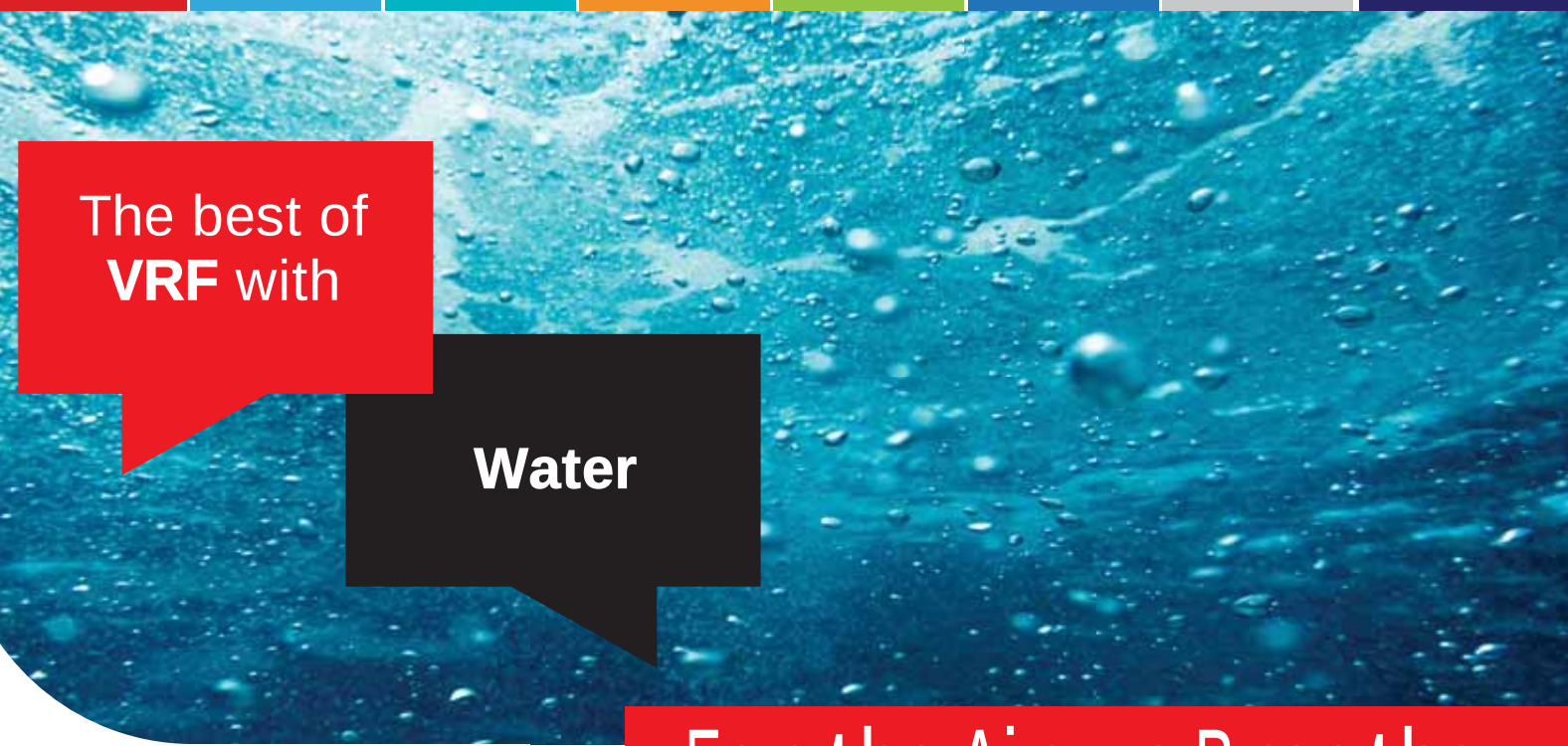
The future of Air is Water

Air Conditioning | Chillers | IT Cooling | Heating | Ventilation | Controls | Automation | Robotics



For the Air we Breathe

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EDITORIAL

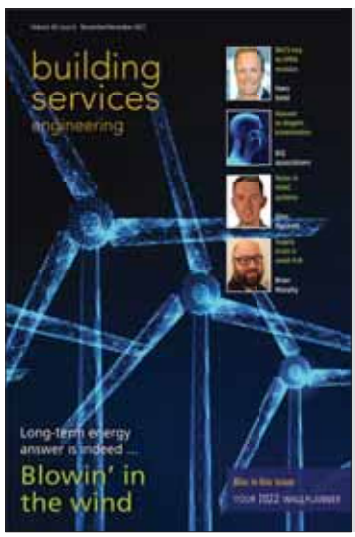
Pledges alone won't cut it!

While much has been made of the COP26 declaration on deforestation, the small print is a bit more disturbing. More than 100 countries have promised to halt and reverse forest loss and land degradation, but not until the end of 2030. That's a decade away … just what damage will be done in the meantime?

Similarly, more than 30 financial institutions with more than $8.7 trillion in assets under management also stated they would make "best efforts" to eliminate deforestation by 2025. Why wait until 2025, and what does "best efforts" mean, especially when you have $8.7 trillion in assets to protect?

On deforestation alone, what was the success (or otherwise) of the New York Declaration on Forests (NYDF), endorsed at the United Nations Climate Summit in September 2014? Faced with today's scenario you would really wonder.

Talk and pledges are the easy part.



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Recent coverage of tight energy supplies in Ireland is a useful reminder of the need to speed up the deployment of renewable power. Noel Cunniffe of Wind Energy Ireland says get it right and we'll become an energy exporter.

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Logistics expert Brian Murphy of transport specialist Expeditors provides in-depth analysis of the breakdown in the supply chain, covering everything from shipping and container shortages to log-jams at major ports throughout the world.

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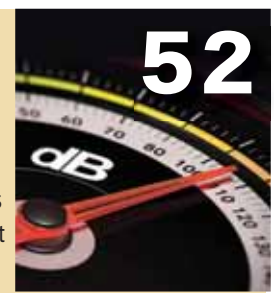
Silence is golden

Noise levels from ventilation systems has become an increasingly pressing topic and an onus is now being placed on manufacturers, system designers and contractors to safeguard acceptable internal noise levels for occupant comfort. Glen Plunkett of iAcoustics discusses.



NEWS AND PRODUCTS

ATP corporate brochure

Founded in 2001, Advanced Technical Products (ATP) has marked two decades in business with an updated website, an online purchasing facility, and now the publication of a specially-designed corporate brochure.

ATP is a leading supplier of quality brands to the HVAC and MEP industries, and complements this with design advice and technical support.

The new brochure is available in both soft and hard copy formats and covers the current range of products available from ATP.

Contact: Dave Daly, Advanced Technical Products. E: info@atpireland.com

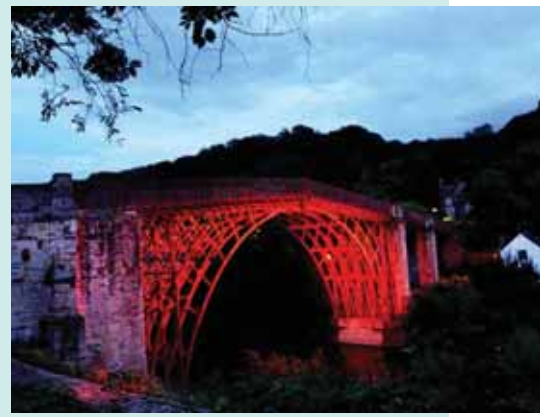
Schneider smart home suites

Schneider Electric has unveiled a suite of revolutionary smart home innovations dedicated to bringing net zero homes one step closer. The new portfolio signals the company's continued commitment to innovation and to creating smart, sustainable homes of the future.

The products include the much anticipated European launch of the Wiser Energy Centre and a range of Elko eco-switches said to be the world's first range to be made from recycled ocean plastic.

SLL guidance on nighttime lighting

The Society of Light & Lighting (SLL) has published its first lighting guide dedicated to protecting the night-time environment. This new guide aims to set out the consequences of light pollution and the right questions to ask when designing exterior lighting schemes. It considers common applications, including façade lighting, heritage buildings, sports lighting and security lighting. Additionally, it outlines potential mitigation measures.



The late Liz Peck, past President and Fellow of SLL, carried out most of the work on *Lighting Guide 21: Protecting the Nighttime Environment* in the months before her untimely death early this year, bringing it very near to completion. It was completed and prepared for publication by Benedict Cadbury, FSLL, Lampholder Lighting Design.

Contact: Juliet Rennie, SLL Communications Manager. E: jrennie@cibse.org

Hevac Golf Day

This year's Hevac annual golf outing took place at Palmerstown House Estate. As the golfers came in, it was obvious that all had enjoyed a wonderful outing on the 18-hole championship course, but also apparent that the 7,419-yard round had taken its toll with some very tired legs in evidence.

The Hevac team did a superb job in organising and hosting the event so that the many guests – both Hevac customers and product suppliers – had nothing to do but enjoy their hospitality and the wonderful surroundings.

The generosity of the many sponsors – Conex, De Dietrich, Wilo, Viaculic, Hamworthy, Cosmogas, Arbonia and Lochinvar – made it all the more enjoyable.

Winning teams were as follows.
First: Medigas – Les Field, Neil Banister and Niall Dwyer;
Second: Conex 1– Mick O'Shea, Seamus English and Dermot Fennelly;
Third: Conex 2 – Gary Keeling, Garrett White and Keith Haughton.

IPS acquires Linesight

Integrated Project Services (IPS), a global leader in developing innovative business solutions for the biotechnology and pharmaceutical industries, has acquired Linesight, a multinational consulting firm headquartered in Dublin.

Both organisations will expand their geographic reach, build on their bench strength and extend their service propositions for their target clients globally. Linesight will continue to serve its clients as it always has, but now has the support of a much larger organisation behind it.

Paul Boylan, CEO, Linesight (pictured), said: "This is a pivotal point in Linesight's successful business history and will allow us deliver on our ambitious strategic plans, expand into new geographies to better service our client needs, and extend our portfolio offering in our existing and new target markets." See http://www.linesight.com

NEWS AND PRODUCTS

Managing stormwater with Wavin

Wavin, the leading global manufacturer of stormwater solutions, has just introduced AquaGrid 40, its innovative pervious paving system, manufactured from 100% recycled plastic. An extension to Wavin's Stormwater range, AquaGrid 40 is a 330mm x 330mm square paving unit that interlinks with integrated locking lugs. These sections can be filled with grass or gravel to provide up to 90% permeable surface area.

Lightweight and easy to install, AquaGrid 40 is also ultra-reliable, with impressive strength, loading and durability credentials. It is a real alternative to hard impermeable surfacing such as tarmac and concrete. Aquagrid also makes loose gravel surfaces trafficable for wheelchair access, bicycles, prams and ease of walking.

Aquagrid 40 offers architects, engineers and developers a real solution to many locations such as driveways where permeable surfaces are typically the default option. It is also suitable for retrofitting many existing permeable surfaces.

Also new from Wavin is the innovative TreeTank solution that ensures trees can be easily and effectively integrated into urban areas without disrupting vital infrastructure.

Wavin's TreeTank root chamber system provides the space within which the uncompacted growing medium is placed while providing sufficient support for pedestrian paths and walkways. It directs roots away from the surface and deep into the ground.

See www.wavin.com/en-ie

New initiative to tackle apprenticeship backlog

Training authority SOLAS and the various education and training boards have created creation over 100 new instructor and support staff posts to tackle the backlog of craft apprentices within the system.

Covid-19 significantly impacted craft apprenticeship programmes. For nine of the previous 18 months, all FET and higher education training centres were closed. However, training continued for some where possible under public health guidance.

For example, between March-August 2021, approximately 4,500 apprentices were returned to onsite training to complete their practical training and all assessments. This work was done using Level 5 protocols.

A new term of Phase 4 and Phase 6 training in higher education institutions recommenced on September with around 2,500 beginning their training.

An additional three-step plan to tackle the backlogs is currently being worked on with further and higher education apprenticeship providers.

BCIA Awards 2022

With many Irish companies now working on major projects in the UK, more and more are considering entering the Building Controls Industry Association (BCIA) Awards. Details of the BCIA Awards 2022 have just been announced and they include nine categories:

Building Controls and BEMS Installer of the Year; Engineer of the Year; Young Engineer of the Year; Energy Management Award; Best Service and Maintenance Provider; Technical Innovation of the Year – Products; Technical Innovation of the Year – Projects; Contribution to Training Award; Smart Buildings Award.

The awards are free to enter but must be submitted online via the dedicated BCIA Awards entries page before the entry deadline of 6pm Friday, 14 January 2022.

See https://bcia.co.uk/bcia-awards/

RACGS Society

The Refrigeration and Air Conditioning Golf Society (RACGS) has a developed a dynamic new website giving a background to the Society, listing t he Committee members, the 2022 schedule and incorporating a blog section.

The new web a ddress is www.racgs.ie and the email address: is racgsgolfsociety@gmail.com There is also a new Linkedin page.

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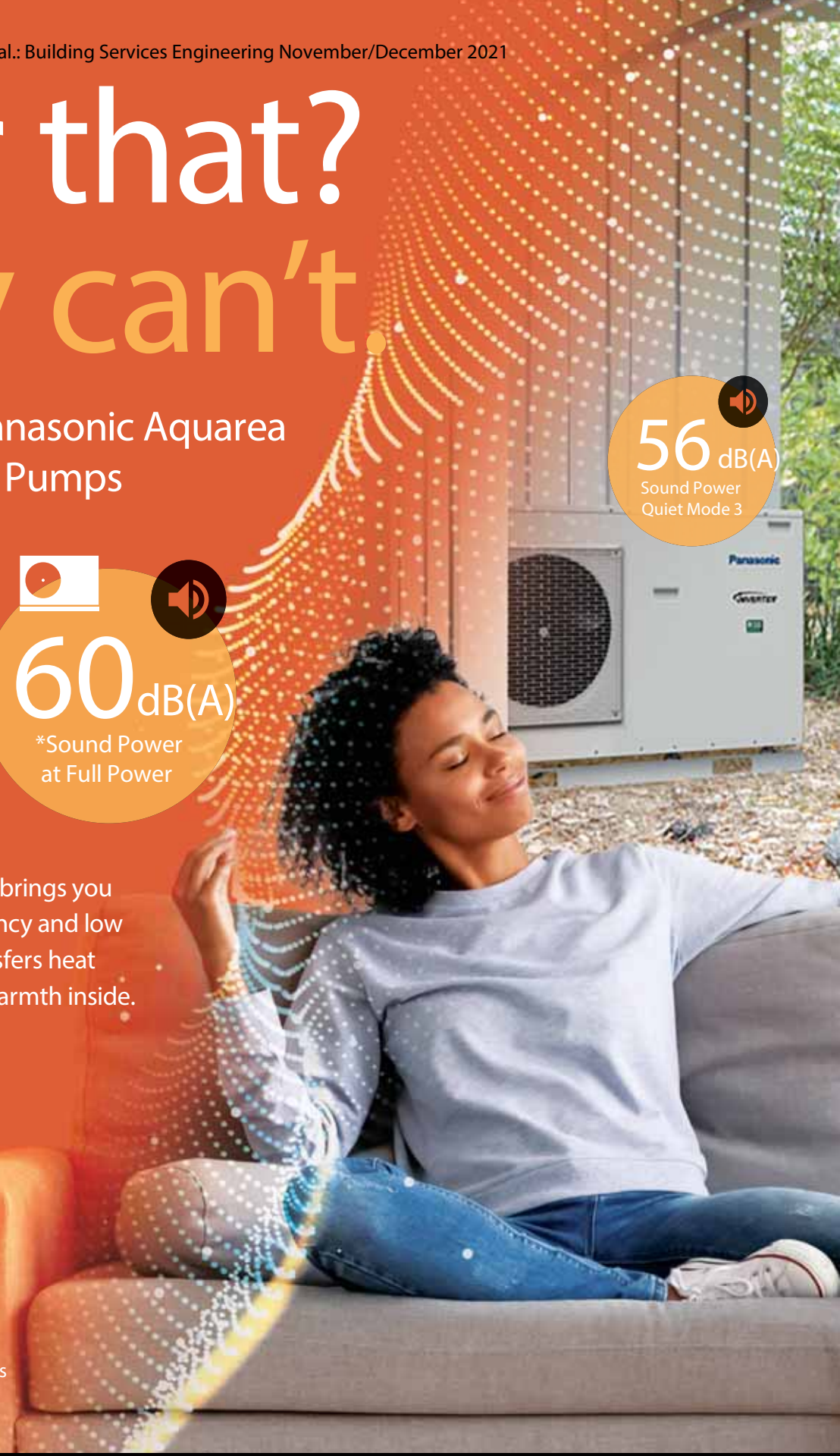

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NEWS AND PRODUCTS

OPW sustainability lead

Minister of State with responsibility for the Office of Public Works (OPW), Patrick O'Donovan, TD (pictured), welcomed the investment of in excess of €4 billion under the revised National Development Plan 2021–2030 for projects and programmes the OPW will deliver through its own activities, and those managed on an agency basis on behalf of clients.

Sustainability and climate action are at the core of the OPW's *Statement of Strategy* and it is committed to a vision that strives for harmony between the built and natural environments.

Minister O'Donovan commented: "The OPW is deeply committed to helping advance sustainable solutions that mitigate against the effects of climate change. The significant investment made under the National Development Plan published by the Government will allow us to implement the changes required to protect communities across Ireland from the impacts of climate change through future-proofed, adaptable flood risk management schemes.

"It will also allow us to support key climate action targets by increasing the energy efficiency of the State's portfolio in tandem with investment in the creation of more agile, digitally-enabled workspaces that will meet the current and future operational needs of our client departments."

What does Net Zero actually mean?

While everyone is committed to Net Zero, the question now being asked it what does it mean? Do we all agree on what it should be? Are we all aiming for the same thing? LETI, a network of over 1000 built environment professionals in the UK and the Whole Life Carbon Network produced a set of definitions earlier in the year to help answer these questions.

CIBSE and LETI are now producing a set of FAQs to accompany the definitions and to make sure they are applied consistently in as many real-life situations as possible. CIBSE is also considering whether to adopt the definitions and is very keen to hear from members on this.

See https://www.leti.london/carbonalignment

Unitherm opens UK branch

Unitherm, already a well-respected leader in renewable heating systems in Ireland, has opened a dedicated office, warehouse and training complex in the UK where the Government has set a target to install 600,000 heat pumps by 2028.

Andy Hooper is Managing Director of the new operation and he has extensive experience of the UK heat pump sector having previously worked with other leading brands in the business. "These are exciting times for renewable heating in the UK and the opportunity to join Unitherm and take the lead in introducing a total package approach that is still new to this industry was not to be missed.

"As the heat pump marketplace continues to grow, demand for quality training by installers will rise exponentially to meet the growing demand. That's why we now offer a complete support package to the industry, from quality training, design, support and commissioning through to the supply of renewable heating systems and underfloor heating (UFH).

"We bring a level of expertise in system design and installation that is unrivalled in the UK and provide a high level of support once the installation is underway, including help with commissioning the system to make sure it is operating at 100% of its efficiency potential. This is virtually unheard of in the UK."

Casper Speakman, National Sales Manager and Andy Hooper, Managing Director, Unitherm UK, with Simon Jupp, local MP and Steve Rhodes, Training Manager, Unitherm UK.

Key appointments at Kirby

Kirby Group Engineering has announced key appointments to its senior management team as the next stage in its strategic development plan gets underway. They include John Grogan, Group Engineering Director; and Darran Monaghan, Hugh Nealon, Mikey Ryan, and Ruairi Ryan, all Associate Director, Operations.

Mark Flanagan, Kirby Group Managing Director, said: "Our success is attributed to the strength of our management team and all our employees. We are committed in developing and investing in our people, which is our primary core value. These appointments further enhance the leadership capability at Kirby and support our growing client base, as well as our expansion into new sectors and geographical regions."

Kirby currently directly employs over 1,200 people with over 2,400 deployed across Ireland, the UK and Mainland Europe.

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NEWS AND PRODUCTS

PM Group Philadelphia office

PM Group has opened a new office in Philadelphia that will focus on innovative design solutions for life science clients in the mid-Atlantic region. The company already has offices in Boston and San Francisco and an international network of 16 offices worldwide.

PM Group is employee-owned with a 48-year track record of delivering complex projects for the world's leading multinationals. With over 3,400 people, turnover in 2020 was approximately €350 million and clients include AbbVie, Bayer, Johnson & Johnson, Merck, Regeneron, Resilience, Sanofi, and Thermo Fisher Scientific.

Allan Schouten, PM Group's US President, said: "The opening of our Philadelphia office is a significant milestone in the strategic development of our global life science business. As with our offices in Boston and San Francisco, we are investing to build a leading life science center in Philadelphia to serve our clients in the US and internationally."

Above: Brendan O'Connell, Philadelphia Business Unit Operations Manager with Lauren Bubnis, Senior Talent Acquisition & Business Specialist; Daryl Kern, Principal Architect and Harry Segner, Senior Director, Head of Business Development.

Renewable Energy Ireland

Renewable Energy Ireland has welcomed the decision by the Government to bring forward the next auction under the Renewable Electricity Support Scheme (RESS).

The first auction took place last year and almost 1,300 MW of wind and solar farms were awarded contracts.

Dr Tanya Harrington, Chairperson of Renewable Energy Ireland (pictured), said: "This is a very welcome development. The sooner it opens, the more quickly we can build and connect the wind and solar farms that will enable Ireland to reach our 2030 renewable energy target."

Onyx PV glazing

Clear Energy (a trading name of EICL) has introduced Onyx PV glazing, manufactured by Onyx Solar, to the Irish marketplace. Onyx Solar uses photovoltaic glass as a material for building purposes as well as an electricity-generating material, with the aim of capturing the sunlight and turning it into electricity.

The panes are made of layers of heat-treated safety glass which can provide the same thermal and sound insulation as conventional architectural glass, not to mention the fact that they also let natural light go through in the same way as conventional glass.

Onyx PV glazing comes in many transparencies and can be used in curtain walls, ventilated façades, skylights, canopies, pergolas, louvres, balustrades, floor tiles and even some outdoor furniture.

In addition to creating energy, PV glazing also reduces solar heat gains into a building, thereby reducing the energy required for air conditioning and also ensuring great filtering power as 99% of harmful UV radiation and up to 95% of IR radiation can be absorbed.

Contact: Peter McMahon, Clear Energy.
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BACS amendments in the revised EPBD

The importance of proper, ambitious implementation

In this specially-commissioned article, Hans Smid, President, eu.bac – the voice of the European building automation sector – puts the revised EPBD into context, and especially so the changes with regard to BACS and the implementation of the "smart readiness indicator".

Buildings account for almost 40% of the consumption of energy in the EU and the Energy Performance of Buildings Directive (EPBD) is the main legal instrument to address this challenge. It provides for a comprehensive and integrated approach towards improving the efficient use of energy in both new and existing buildings, residential as well as commercial. Ultimately, this is the instrument that translates high-level policy goals into concrete measures to deliver the expected savings in the building sector.

Being a Directive and not a Regulation, one key element that must be considered relates to the flexibility of the member states. A Directive always allows flexibility, to a certain extent, to the member states in the transposition of such a Directive. It is therefore essential not only to contribute to the legislative process at EU level, but also to support implementation at national level, to ensure there will be no loopholes undermining the achievement of the previously-agreed goals.

Hans Smid, President, eu.bac

EPBD: what is it?

- The acronym EPBD stands for "Energy Performance of Buildings Directive" (2010/31/EU);
- The Directive promotes policies helping:
  a) achieve a highly energy-efficient and decarbonised building stock by 2050;
  b) create a stable environment for investment decisions;
  c) enable consumers and businesses to make more informed choices to save energy and money;
- The Directive was amended in 2018 (by the Directive 2018/844/EU) and will be amended again in the coming years (the Commission will present its new proposal in December 2021).

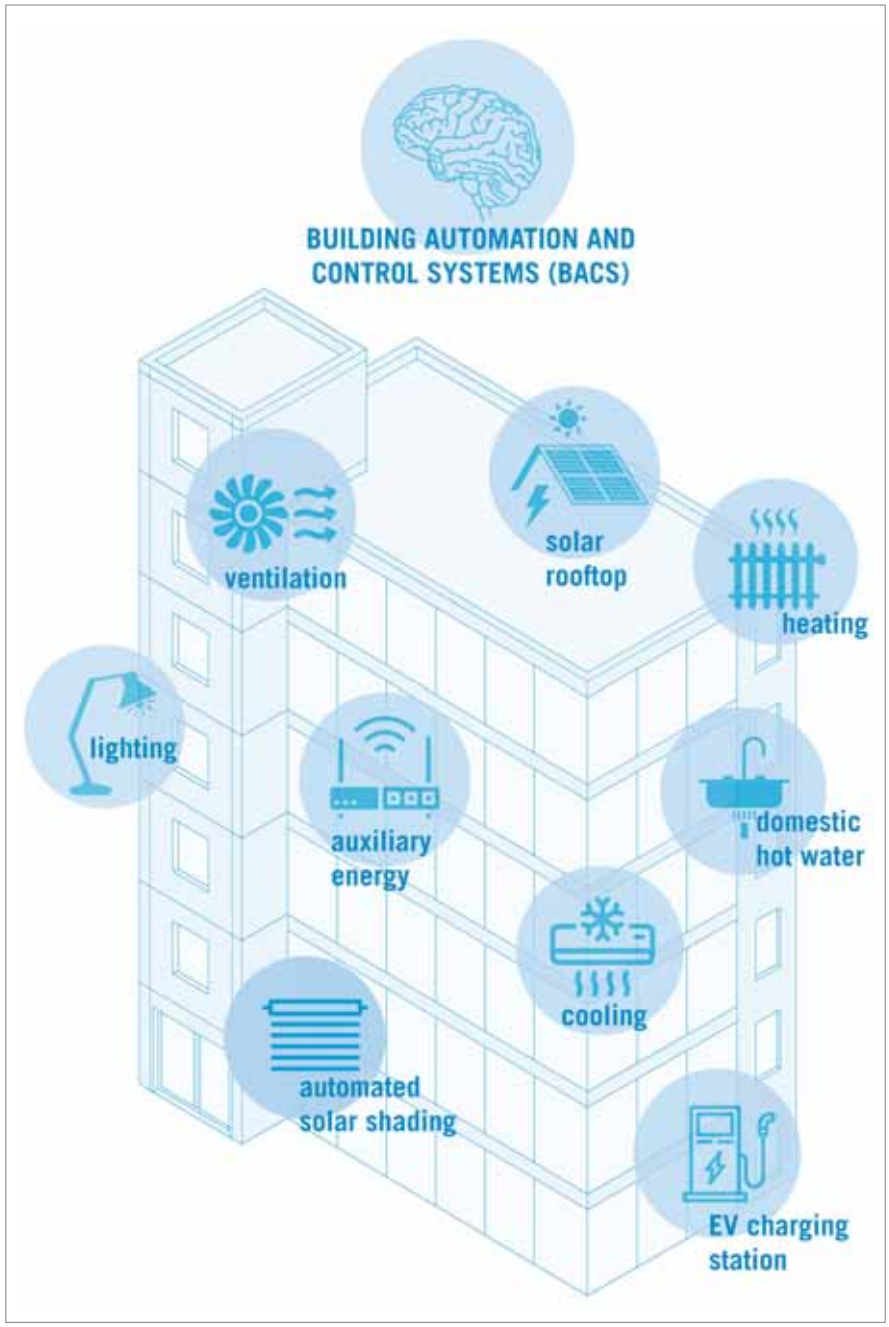

Figure 1 – Building automation and control systems (BACS).

The last revision of the EPBD was approved in 2018. The main changes, compared to the previous version of the Directive, were the strengthening of the long-term building renovation strategies and the introduction of measures to fully grasp the benefits of smart technologies, through a new smart readiness indicator and measures on building automation and control systems (BACS).

BACS refers to the products that monitor and automatically adjust the energy-using technologies in our homes and buildings to deliver a comfortable environment. They are, in a way, the "brain" of the building, as they ensure integration and optimal functioning of technical building systems, making sure they don't work against each other and avoiding malfunctions.

BACS are also the "intelligent nodes" of the smart integrated energy system developed around

Directive or Regulation – what is the difference?

Both Directives and Regulations are different forms of legal acts of the EU. Other EU legal acts are Decisions, Recommendations and Opinions.

Regulation

An EU Regulation is immediately applicable and enforceable by law in all member states. As good practice, member states issue national legislation that defines the competent national authorities, inspection and sanctions on the subject matter.

Directive

A Directive is applicable to all member states. It sets certain aims, requirements and concrete results that must be achieved in every member state. It sets a process for it to be implemented by member states. National authorities must create or adapt their legislation to meet these aims by the date specified in each given Directive.

the building. Demand-response, consumption prediction, energy storage, management of distributed generation of renewables (e.g. solar roof-top PV) are all "smart functions" strongly connected to optimal functioning of the building. Thanks to them, building managers have real-time access to cloud-based analytics, reporting and services, allowing for informed decision-making. See Figure 1.

According to the new EPBD[1], all non-residential buildings, existing and new, with an effective rated output > 290kW, must be equipped with certain BACS capabilities by 2025[2].

These requirements are essential to achieve the EU climate goals and the figures prove this. These measures alone[3] could lead to annual savings corresponding to 14% of the total building primary energy consumption with €36 billion energy bill savings triggered, and the value of energy savings exceeding the value of investments by a factor of 9[4]. See Figure 2.

Nevertheless, these impressive numbers can be achieved only with an optimal implementation. How to achieve this? Here are two important elements.

First, the requirement for the deployment of the BACS capabilities is subject to a clause in the Directive: "where technically and economically feasible". The Commission clarified[5] that it is the duty of each single member state to transpose this requirement providing "clearly identified, framed and justified" parameters for defining feasibility.

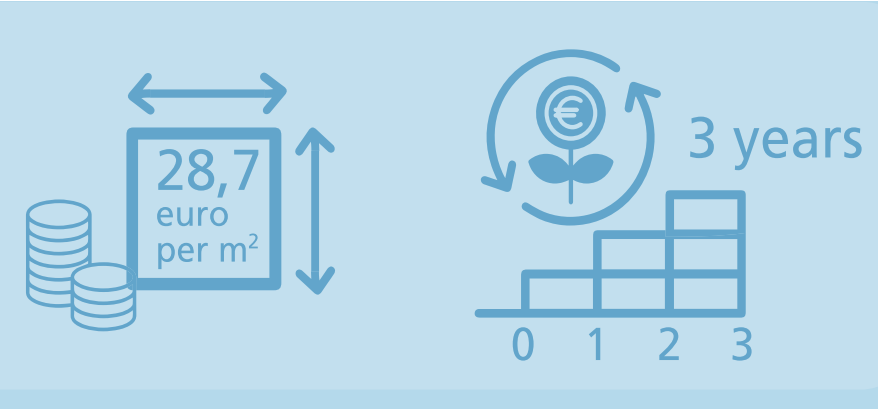

Figure 2 – BACS are cost-effective technologies with a short payback time.

It is up to the single member state to decide which parameter and to set the threshold, but there should be a parameter.

The Commission also provides two examples that could be used in this framework – payback time or initial cost. France, for example, included a paragraph saying that the installation of BACS capabilities is always considered feasible unless the payback time is more than six years. In this specific case, when a building is in the scope of the requirement, in order not to have the capabilities there will be written proof that the payback time goes beyond six years. In the Dutch legislation, it is specifically written that the installation of BACS capabilities is always considered feasible.

Second, that the capabilities are defined in the Directive with simple words and no technical reference. In order to clearly distinguish which BACS are fulfilling the requirements from those which are not, there is the need to include more details by each member state. At eu.bac we first suggested to simply require the EN1523 Class B. As in some member states, it is not possible to make a direct reference to standards in the legislation and, as we were required to provide support on this, we developed the eu.bac EPBD BACS compliance verification checklist[6]. This checklist offers a highly-detailed tool for national compliance inspectors, building owners, BACS designers and policymakers. It helps industry professionals understand what systems need to be implemented, and helps authorities distinguish buildings that comply with EPBD BACS requirements from those that don't. See Figure 3.

With the Directive entered into force in May 2018 and the deadline

BACS Compliance Verification Checklist

STEP 1: The BACS compliance verification shall be conducted only if the effective rated output for heating (Art.14)/air-conditioning (Art.15) systems or systems for combined space heating/air-conditioning and ventilation in the building is over 290kW.

ID	SELF-DECLARATION COMPLIANCE QUESTIONS (answered by Building Owner)	SELF-DECLARATION COMPLIANCE SUPPORTING RECORDS (provided by Building Owner)	COMPLIANCE VERIFICATION CHECKS (conducted by Building Inspector) (provided by Building Owner)	RESPONSE	Boundary Conditions/ PREREQUISITES for the BACS capabilities to be effective
I	**Information Section:** 290 kW COVERAGE				
I1	"What is the effective rated output (calorific output as per EPBD) of the Heating equipment in the building Heating systems (output of all heat generators in the building including main Heating equipment in plantrooms, e.g. boiler, solar heat system, CHP and heat-generating terminal equipment in rooms, e.g. electric direct heater)? NOTE: Every heat generator that adds heat to the building space regardless of its location (generation in main HVAC plant, distribution and emission in the room) should be added in the sum for the output."	PDF list of Heating system main equipment with indication of the maximum calorific output, expressed in kW, per piece of equipment	Check equipment nameplates of main Heating system equipment in main HVAC plant or the building Operation & Maintenance Manual	<kW>	
I2	"What is the effective rated output (calorific output as per EPBD) of the Air-conditioning systems in the building (output of all cold generators in the building including main cooling equipment in plantrooms, e.g. chiller, heat-pump, and cooling generating terminal equipment in rooms)? NOTE: Every cooling generator that adds cooling to the building space regardless of its location (generation in main plant, distribution and emission in the room) should be added in the sum for the output."	PDF list of Air conditioning system main equipment with indication of the maximum calorific output, expressed in kW, per piece of equipment	Check equipment nameplates of main Air-conditioning systems equipment in HVAC main plant or the building Operation & Maintenance Manual	<kW>	

Figure 3 – BACS compliance verification checklist excerpt.

for transposition expired in March 2020, there can be no delay in fully implementing the EPBD. The delay in implementation has a negative effect on the environmental benefits expected from these already-approved measures and is also creating an extremely unfair situation for investors and professionals – the first can end up spending money today on systems that will need to be replaced tomorrow, and the latter risk being overburdened with short-notice project requests when the 2025 deadline approaches.

At eu.bac, we want to live in a world where everyone lives in buildings that are smart, decarbonised and efficient. We work every day to make this a reality across the EU. Follow us on LinkedIn, Twitter and YouTube as @eubac and our website eubac.org for the future updates, news and events in the building automation and control sector. ■

References

1. Article 14 par. 4 and article 15 par. 5 (Directive amending the Energy Performance of Buildings Directive (2018/844/EU)).
2. The building automation and control systems shall be capable of:
   A. continuously monitoring, logging, analysing and allowing for adjusting energy usage;
   B. benchmarking the building's energy efficiency, detecting losses in efficiency of technical building systems, and informing the person responsible for the facilities or technical building management about opportunities for energy efficiency improvement;
   C. allowing communication with connected technical building systems and other appliances inside the building, and being interoperable with technical building systems across different types of proprietary technologies, devices and manufacturers.
3. Together with the other key requirement of article 8, prescribing the mandatory installation of self-regulating devices for the control of the temperature in each room.
4. Additional relevant figures: 64 Mt CO2 annual savings (peak in 2030) and 450 TWh annual final energy savings (peak in 2035).
5. COMMISSION RECOMMENDATION (EU) 2019/1019 of 7 June 2019 on building modernisation (paragraph 2.3.4, page 23).

> **BACS refers to the products that monitor and automatically adjust the energy-using technologies in our homes and buildings to deliver a comfortable environment. They are, in a way, the "brain" of the building.**

arbonia

COMMERCIAL HEATING

Design-led, engineering-based commercial heating solutions

Having signed a partnership agreement with Arbonia Group AG this time last year, Hevac has already gained considerable market share with their portfolio of high-quality, innovative commercial radiator, radiant panel and trench heating products.

Established in 1874 in Switzerland, the Arbonia Group has an annual turnover of circa €1.1 billion and is active in more than 70 countries worldwide. In Ireland, Hevac is promoting its full product portfolio under the Arbonia umbrella with a particular focus on the Decotherm and Arbotherm 1.5mm thick steel tubular commercial radiator products, radiant panels and tubes, and trench heating.

Design service

Today's marketplace demands much more that just warmth … the heating system has to be energy-efficient, it must comply with all relevant standards, offer long life, flexible siting and have modern aesthetics. That may be a tall order for some but the Hevac Arbonia

Bernice Reid

partnership delivers to that exacting brief, thanks especially to the system design and product selection support provided by Hevac Sales and Specification Representative, Bernice Reid.

Bernice has extensive experience of quoting commercial heating projects, and is especially adept at receiving heatloss schedules from consultants and selecting the most suitable product(s) to meet the intended application. She is very comfortable doing site visits while consultants can also meet her at Hevac's new purpose-designed showroom and training centre in Santry to discuss projects.

Decotherm

Decotherm is an award-winning classic radiator offering enhanced quality and optimised visual appearance. It represents straightforward, high-quality heating design and clear lines, and is the perfect complement to modern, sophisticated interior architectural settings.

Decotherm is ideal for schools as these radiators meet the technical guidance document requirement of 1.5mm steel thickness. Shallow models are available for recesses (something that is especially important in many schools) while the 2mm steel high-pressure version is designed for high office blocks, prisons etc.

Arbotherm

Arbotherm offers a clear flat-pipe structure and open transparency for an architecturally-outstanding heating solution. All models are optimised to provide short reaction periods and an optimal proportion of radiated heat and convection. Extremely adaptable, Arbotherm models are especially effective in front of glazing, and as a parapet or stairway railing, with its softly-curved, angular design providing limitless options. There is also a double-layer version for even more heat.

Radiant Panels

The Arbonia range of radiant panels is suitable for installation into ceiling grids, plasterboard solutions or simply left free-hanging. They are available with anti-bacterial paint for hospital environments, something that is now an even more sought-after requirement. There are also larger industrial panels for high-bay warehouses, airports and school gymnasiums.

Trench Heaters

Arbonia trench heaters come in three types:

- Natural convection
- Fan-assisted
- Heating and cooling

There is also a range of Arbonia grilles incorporating special construction such as angular, around columns and mitred cuts.

PLUMBING BEST PRACTICE

SR 50 Series

– gateway to plumbing/ heating systems best practice

While it may be hard to believe, up to earlier this year Ireland never had an Irish Code of Practice for heating and plumbing in domestic dwellings. It's not been for the want of trying, and all credit to SEAI and NSAI – and more especially Paul Martin of SEAI and Fergal Finn of NSAI – who have persevered in the face of all manner of obstacles to get what's now known as the SR Series 50 over the line.

In fairness, a big part of the problem is the nature of the Irish marketplace. In other European countries, industry representative organisations take existing European standards (EN) and draft their own industry-specific codes of practice. However, the sector in Ireland lacks a cohesive structure and the absence of such organisations mitigates against this happening. That said, NSAI boldly undertook to draft codes of practice for the Irish plumbing industry and, despite being a very drawn out process, these have now been published in the form of the SR 50 Series of Irish Standard Recommendations. Obviously, they include the requirements of existing European standards that have been adopted as Irish standards.

Thanks to the leadership skills of Martin and Finn, these standards have been drafted by NSAI Technical Committees in association with representatives from Government departments and agencies, training providers, equipment manufacturers and suppliers, M&E consultants and, most importantly, time-served plumbers. The commitment of the various individuals involved should also be acknowledged as, without their selfless contribution over many years, this milestone would never have been achieved.

The SR 50 Series is made up of four complementary sections covering domestic plumbing systems. They are as follows:

SR 50-1:2021

Water-based heating systems in dwellings provides practical information and guidance on water-based central heating systems in permanent domestic dwellings. The Standard Recommendation was written to encourage designers and installers to ensure that central heating systems are not only designed and installed correctly, but are also energy efficient and meet manufacturer's criteria. SR 50-1:2021 is complementary to the European Standards IS EN 12828, IS EN 12831 and IS EN 14336, which have been adopted as Irish Standards.

SR 50-2:2012

Thermal solar systems provides recommendations for the design, installation, commissioning and maintenance of solar water heating systems for domestic buildings.

SR 50-3:2021

Water supply for domestic use within dwellings and their curtilages sets out the requirements for the design, installation and commissioning of domestic cold-water and domestic hot-water supply systems in domestic dwellings. It is complementary to the IS EN 806 Series of European Standards which have been adopted as Irish Standards. It includes the relevant details from BS 8558:2015.

SR 50-4:2021

Heat pump systems in dwellings concentrates on the types of heat pump that are the most common to be installed in dwellings to provide space heating and/or domestic hot water. It gives guidelines for the design, installation, commissioning, and maintenance of heat pump systems with an effective rated output up to 70 kW in new and existing dwellings.

Replacing bad habits

The SR 50 Standards Recommendations include guidance and simplified methods that could replace bad habits. For example, a heating contractor might normally replace a boiler with a like-for-like model of the same power, say 18kW. Boilers installed in Ireland are traditionally oversized which leads to the boiler operating at a lesser efficiency than what it was designed to do.

Best practice is to look at the structure and any retrofit measures that may have been done and recalculate the boiler sizing. This can lead to a smaller boiler giving the same thermal comfort but with reduced running costs and less environmental impact. There are several phone apps and websites available that enable quick, easy and accurate boiler sizing.

The primary focus of this article is SR 50-1, which covers the requirements for water-based central hearing systems used for space heating in dwellings; and SR 50-3, which covers the requirements for the conveyance of potable cold water for domestic hot and cold water from mains supply to the draw-off points within dwellings and its curtilages (the area of land attached to a dwelling).

"The SR 50-1:2021 and SR 50-3:2021 Standard Recommendations have been drafted in such a way that the reader should not have to reference or purchase additional Standards," says Finn. "They include the full process for installing plumbing and heating systems that can be used by a plumber or heating contractor for individual jobs, or by mechanical or electrical consultants for larger projects.

"As such, the SR 50 Standards Recommendations are intended to be used by all engineers, architects, surveyors, contractors, installers and inspection authorities involved in the supply, installation, operation and maintenance of plumbing and heating systems in buildings."

"In addition," says Martin, "the Standards Recommendations can be referenced in tender documents and contracts as being the standard to which works are carried out. They can also be used to confirm to a client the components and quality of materials that are required for a job. While voluntary, they nonetheless provide best practice criteria which, if adhered to, will deliver the best possible outcome in respect of system performance, energy efficiency, carbon reduction and best value for the client. It can also mean less call-backs for the installer.

"While the SR 50 Standards Recommendations were written primarily for plumbers, they can be used in many ways. They set a baseline for heating and water supply systems in domestic dwellings. Heating and plumbing contractors can use the Standards to support the inclusion of equipment and components in their pricing, and to demonstrate compliance of their work to clients. Architects and building designers can use them as a Code of Practice in their work and as a specification to which installation works can be carried out to by subcontractors. The same applies to county councils and developers".

Paul Martin, Chair, SR 50-1 with Peter O'Reilly, Chair, SR 50-3 Committee, Fergal Finn, Manager Standards, Innovation, Policy & Business Development, NSAI, and Alan Hogan, Managing Director, Sanbra Fyffe, who hosted the photoshoot.

Last word to Finn: "Just as the use of IS 813 by gas installers and IS 10101 by electrical contractors is currently widespread in Ireland, success for the SR 50 Series would be that heating and plumbing designers, and installers, would use the standards in the same way, and in doing so, improve the performance, quality and safety of installations nationwide."

NB: Due to copyright agreements that NSAI is bound to, it is unable to make these standards available free of charge and is obliged to pay royalties to the various Standards Development Organisations involved. However, the price has been set at a nominal €55 for each of the four sections.

See https://shop.standards.ie/ ■

> **The Standards Recommendations can be referenced in tender documents and contracts as being the standard to which works are carried out.**

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New Grant on-site Training Academy courses

Having restarted on-site training at its headquarters in Birr, Co Offaly earlier in the summer, Grant has announced the addition of a brand new course to its ever-growing programme, alongside new upcoming dates for its heat pump and oil product training courses.

Grant's free heat pump training course is for domestic heating and renewable installers who wish to know more about the Grant Aerona³ R32 air to water air source heat pump range. It covers its construction, how it operates, electrical wiring, controller settings, sizing, installation and more. Upcoming dates for November and December's heat pump courses can be found by visiting the Grant website.

Those attending the oil product training course will gain knowledge about the Grant Vortex and Grant Euroflame condensing oil-fired boiler ranges. This course covers boiler construction, principles of operation, installation, balanced and conventional flue systems, fault-finding and commissioning/servicing procedures.

Grant's new oil burner course will provide attendees with the knowledge and skills required to understand the operating sequence of an oil-fired burner and how to diagnose any potential faults before they arise. This course is the first provided by the Grant Training Academy to require a €50 per person fee. However, it is a small investment as the course covers all areas associated with domestic oil burners, including how they operate, the basics of combustion, how to use test equipment, how to test for faulty components, flue gas analysis and burner commissioning.

Grant Vortex biofuel compatible condensing boiler.

Grant's on-site training courses take place at the company's state-of-the-art training facility which opened at the beginning of 2020.

Grant also continues to offer online training via the *Grant eLearning Academy.* It features a range of training courses, including a Grant Aerona³ R32 air to water, air source heat pump course that has been approved for CPD by The Royal Institute of the Architects of Ireland (RIAI).

Upcoming dates for all courses can be found on the Grant website.

Grant Vortex condensing oil boiler

Over the past 40 years Grant has developed some of the most innovative and efficient oil-fired boilers available on the market. Utilising its patented Vortex stainless steel secondary heat exchanger, Grant boilers are designed and manufactured to the highest standards, thereby guaranteeing durability and efficiency. While the range uses advanced technology, it is easy to install and requires low-maintenance levels.

There are 63 models – with outputs from 12kW to 70kW – within the award-winning Vortex range and they all deliver maximum home heating efficiencies while, at the same time, reducing fuel bills. Depending on the age and make of an old boiler, upgrading to a Grant Vortex condensing oil boiler can help save up to 25% on annual fuel bills. The range comes in various models including boilerhouse, outdoor, utility and wall-hung variants. It is an innovative, biofuel-compatible range that will provide a greener future for generations to come.

Think Heating. Think Grant.

Visit www.grant.eu for more information on Grant's range of innovative heating solutions and R&D breakthrough. Follow Grant on Facebook and Twitter @GrantIRL or Instagram @Grant_IRL ■

Sira – elegance, versatility and power

Sira Industrie is a leading manufacturer of domestic heating radiators and the worldwide patent holder of the first revolutionary aluminium radiator, developed and registered in 1961. It has a portfolio of key ranges, developed to suit specific applications, with all radiators manufactured using the most advanced techniques to provide maximum performances with less energy consumption.

Sira Alice Princess radiator from Unitherm Heating Systems.

The full range is now available in Ireland from Unitherm Heating Systems with the Alice Princess collection very much to the fore. This new die-cast aluminium radiator features an elegant design with two front fins. The top has a rounded and edge-free shape that makes for a refined aesthetic and guarantees high safety. Thanks to the front fins directing heat towards the centre of the room, this radiator delivers perfect environmental comfort and high performances.

Dimensions

- Diameter of connections 1";
- Element width 80mm;
- Assembled in compositions from four to 15 elements;
- Standard colour RAL 9010 white Sira Industrie;
- The maximum operating pressure is 600 kPa (6 bar);
- Watt thermal efficiency tested and obtained at MRT of the Politecnico di Milano, as per EN 442/1/2 norms.

Apart from the Alice Princess collection, the Sira radiator portfolio also includes the following:

Steel towel rails
Termoarredo is a towel rail range that combines excellent thermal performances and smart design. Made of high-quality carbon steel, these towel rails are real furniture elements … elegant, refined and easy to integrate into any environment. They are designed to ensure home safety thanks to soft and rounded contours.

Extruded aluminium radiators
Aluminium is a line of extruded aluminium radiators from Sira that offer great versatility, excellent performance and low consumption. Because of Sira's special technology, these radiators are the only ones to reach a 2000mm height and to adapt to any market's demand.

Bimetal and hybrid radiators
Bimetal is a range of modular radiators by Sira that represents unique capabilities. Patented by Sira, Bimetal technology combines the advantages of a steel core with those of an aluminum body. Bimetal radiators feature curves and original shapes that distinguish them from other brands. The main points of strength are:

SIra Alice Queen.

- Innovative and unique flawless finish;
- Very fast setup, reduced water content;
- Unmatched structural strength and durability;
- Special steel alloy frame;
- Absence of sharp edges.

The Bimetal range has recently been expanded with a new innovative patented product, RS Twin hybrid radiator, that can operate with separate hot water supply or with stored electricity energy.

Electric radiators
Electron is the new line of Sira electrical radiators featuring innovative technology and high performance. It uses armored electrical resistances, integrally fused one-by-one, in sectioned aluminum fins. This permits optimal thermal conductivity and a more precise regulation of heat.

Contact: Unitherm Heating Systems. Dublin: 01 – 610 9153;
Cork: 021 – 441 4010;
Galway: 091 – 380 038.
email: info@unithermhs.ie;
www.unithermhs.ie ■

NESTA and NESTA Plus boiler innovations

The AIC NESTA range of floor-standing, high-efficiency condensing boilers from C&F Quadrant is suitable for either medium or large residential and commercial installations. They are perfect for retrofit or new-build projects and are available in four outputs – 120kW, 160kW, 200kW and 250kW – all with a single enclosure size. The small footprint (0.5sq m) and compact dimensions means they can be installed in areas where space is at a premium.

The internal control unit of Nesta boilers allows for management of cascades up to six boilers in a series of direct and mixed circuits and additional DHW circuit, with boiler management and alarm. The Nesta range is also equipped for remote management via ethernet network or GSM router.

Nesta features and benefits

- Stainless steel heat exchanger;
- Self-cleaning flue ways;
- Internal circuit piping in welded stainless steel;
- Low pressure drop;
- Compact dimensions;
- Reduced maintenance;
- Can be installed in cascade up to six boilers;
- Low NOx levels.

The NESTA portfolio has recently been extended to include NESTA Plus, a similar range of floor-standing, high-efficiency boilers but with larger output options of 280kW, 420kW, 570kW and 840kW.

The NESTA Plus high-output, single- pass condensing boilers have an impressive 10:1 modulation range that provides high seasonal returns and significant savings on gas consumption. Linear modulation addresses the needs of higher-output plantrooms and allows the boiler to consistently achieve maximum efficiency, limiting boiler cycling as much as possible. This technology is effective in both new-build and retrofit heating systems.

Left: The unique "Fire Tube" technology is at the core of both models.

NESTA Plus features and benefits

- Stainless steel heat exchanger;
- Self-cleaning flue ways;
- Internal circuit piping in welded stainless steel;
- Low pressure drop;
- Compact dimensions;
- Reduced maintenance;
- Lifting points for transportation and positioning;
- Low NOx levels.

The NESTA Plus controller enables remote boiler management by web server connectivity. One of the primary benefits of this advanced integrated control system is the optimalisation of periodic servicing using self-diagnostics to assist the engineer prior to attending site.

At the core of all NESTA boilers is AIC's stainless steel "Fire Tube" heat exchanger technology. The use of high-grade stainless steel alloys ensures product durability, reliability, and higher resistance to corrosion and oxidation.

Another advantage is the self-cleaning feature. The unique design and orientation of the heat exchanger allows the condensate to run down the inside of the heat exchanger tubes and cleans any possible traces of combustion residue. This function allows the boiler to maintain maximum efficiency throughout the lifespan, leading to reduced running costs and maintenance for the end user.

Contact: C&F Quadrant.
Tel: 01 – 630 5757;
email: sales@cfquadrant.ie;
www.cfquadrant.ie ■

Versatile's Maxi2020 LST.

What are low surface temperature radiators?

Low surface temperature (LST) radiators are a safer alternative to traditional radiators and are well suited to all kinds of healthcare buildings, residential accommodation, schools and nurseries.

Why are LSTs safer?

At the top-end of their operating range, the casing of a steel panel radiator might reach a temperature of 80°C. That's enough to cause potentially severe burns to anybody who touches it for more than a few seconds – and even partial burns are possible with the briefest of contact.

The heating element and pipework in an LST radiator are decoupled from the casing, so no part of the surface exceeds 43°C. Staying cool-to-touch, even in the event of thermostat failure, means LST radiators meet safety standards for healthcare and education environments, protecting children, the elderly and other vulnerable people.

Other safety features – like rounded corners and chamfered edges, compared to the sharp edges of other radiator designs – protect anybody who might fall onto, or collide with the radiator, reducing the likelihood of physical injury.

Other features of LSTs

Although not part of what defines a radiator as "LST", a common feature is a heating element/coil – like Versatile's Low H2O technology – that uses only a fraction of the water of a steel panel radiator.

Versatile's Play LST.

The reduced water volume – around 10% of the volume in a standard steel panel radiator – means the radiator warms up and cools down much faster. Building occupants then have easier and better control over maintaining comfortable room temperatures, as the effect of a change is felt sooner, rather than waiting for an extended period in an uncomfortably hot or cold environment.

A faster thermal response places less demand on the heating source, whether it is a boiler or a heat pump. By not having to work as hard, fuel and energy consumption is reduced, leading to greater efficiency and reduced carbon dioxide emissions.

Contact: Versatile Group.
T: 046 – 902 9444;
E: info@versatile.ie;
www.versatile.ie ■

Left: Stelrad Concord radiators – vertical, horizontal and coloured.

Below: Concord Slimline.

Radiate a little colour ...

"There's never been a better time for people to add a little colour to their décor, with the trend to utilise coloured radiators taking off in a big way here in Ireland," says Chris Harvey, Head of Marketing, Stelrad Radiators. "There was a time when you could get a radiator in any colour, so long as it was white, but the trend to utilise coloured radiators – either in one particular room or across the home – is very definitely on the increase."

White is still the most often selected colour for new-build properties but the move towards colour has come about as a result of the "rise and rise" in popularity of the towel rail radiator for bathrooms and en-suites, according to Harvey. This trend has grown to include replacement radiator projects with decorative or designer radiators featuring in bathrooms, wet rooms and cloakrooms.

However, it was the advent of vertical radiators, again influenced by the towel rail options available, that has seen these designer radiators featuring in rooms other than the bathroom. In particular, they are now featuring in kitchens, hallways, entrance halls, landings and master bedrooms.

Vertical radiators have become quite popular for use in homes with renewable heating systems, the taller radiators offering increased metal surface areas to heat the rooms. They can also be used in rooms where wall space is at a premium – narrow but taller radiators can do the job of sharing heat around the home from nooks and crannies, and on walls that only offer narrow areas for the installation of radiators.

Vertical radiators, along with K3 radiators with three panels and three sets of fins, are particularly effective at providing the additional heating area that lower temperature heating systems require to keep homes cosy.

While the selection of coloured radiators often means a delay in delivery – six to eight weeks is a typical timeframe – manufacturers like Stelrad now offer a wide selection of coloured radiators from stock, with delivery in 72 hours. Most popular are radiators in a variety of dark grey finishes which offer stand-out radiators for use around the home, particularly against white walls.

As time goes by, more and more coloured radiators and coloured versions of designer and decorative options will become available, including as ex-stock items. It's only a matter of time before we see coloured radiators used on a wider scale across all Irish homes.

Contact: Stelrad Radiators Group.
T: 0044 844 543 6200;
E: marketing@stelrad.com;
www.stelrad.ie ■

Left: Stelrad Concord side anthracite radiator.

CIBSE Ireland Golf

CIBSE's annual golf day kick-starts sector

The recent CIBSE Ireland annual golf day proved an enormous success and helped kick-start more industry engagement as we finally emerge from Covid-related restrictions.

Despite being unable to hold a shotgun start, 23 teams still participated and enjoyed a Luttrelstown course that was in magnificent condition, with the bonus of beautiful weather.

The appetite for social engagement and interaction was evident throughout the day and indeed augurs well for the CIBSE Ireland annual lunch scheduled for the Clayton Burlington on Friday, 26 November 2021. Thanks to all the teams who participated on the day, and especially Wilo Ireland, the main sponsor.

Results

Winners: Team Heat Merchants 1
Second: Team Jones Engineering 1
Third: Team PM Group
Long Drive: Shane McCarthy
Nearest the Pin (4th): Bernie Costelloe
Nearest the Pin (15th): Ciaran Moody

Stephen Weir, CIBSE Ireland Vice Chair with Derek Elton, Managing Director, Wilo Ireland (main sponsor) and Pat Lehane, CIBSE Ireland and *Building Services Engineering.*

Winners – Team Heatmerchants 1: Paul McGorty with Alan Carton, Tom Sheridan and Peter O'Brien.

Second place – Team Jones Engineering 1: Fergus Weldrick with Vincent Hickey, Peter Elms and Alan Lynch.

Third place – Team PM Group: Donal Sexton with Ciaran Berkeley, Ian Harte and David King.


Team ATC


Team Hevac & EICL


Team Sisk


Team Mitsubishi Electric 1


Team Mitsubishi Electric 2


Team Euro Gas

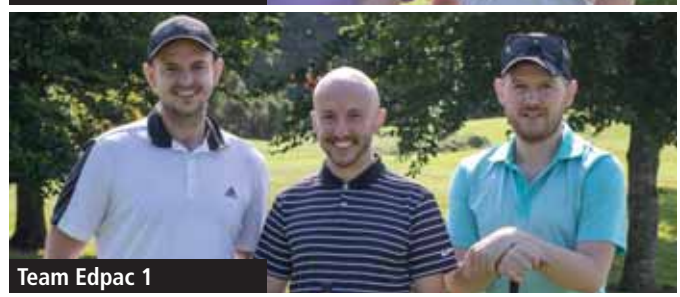

Team Delap & Waller


Team Daikin


Team Wilo 1


Team LAI


Team Wilo 2

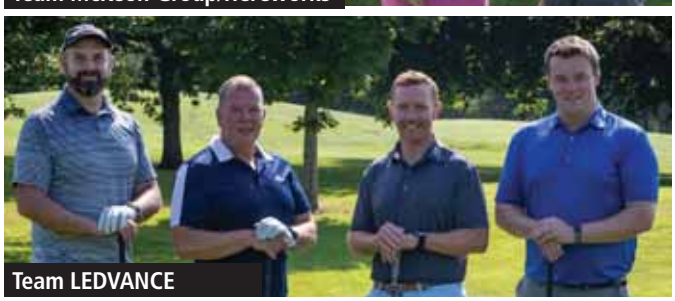

Team Edpac 1

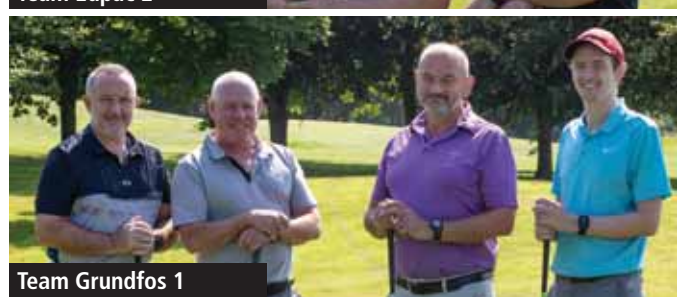

Team Jones Engineering 2


Team Heatmerchants 2


Team McKeon Group/Hereworks


Team Edpac 2


Team LEDVANCE


Team Grundfos 1


Team Grundfos 2


Team C&F Quadrant

aic heating systems

The AIC heating portfolio – exclusively available from C&F Quadrant – covers a wide range of outputs and is the perfect solution for a variety of commercial applications. At the heart of every boiler is the unique "fire-tube" stainless steel heat exchanger which delivers maximum heat extraction with minimum size. Brief details of the range are highlighted here.

NESTA PLUS

The extended range of NESTA PLUS boilers is designed for commercial and industrial applications. Based on the tried and tested "fire-tube" design heat exchanger, the range of floor-standing condensing boilers is now available in models with outputs from 280kW up to 840 kW. They can also be installed in cascade.

NESTA CHROME

Offering flexible heating solutions for larger output requirements, NESTA CHROME boilers can be installed in cascade of up to four boilers using the internal controls. Cascade installation also ensures the delivery of efficient modulation and minimal loss of output during servicing. Models from 60kW up to 150kW.

NESTA

The NESTA range of floor-standing condensing boilers offers high-efficiency and enhanced performance with intelligent control system. Built with a stainless steel heat exchanger of proven "fire-tube" design, AIC boilers are suitable for demanding commercial applications. Models from 129kW up to 250kW.

Excellent products supplied and supported by C&F Quadrant

COILMASTER

Designed to optimise efficiency and performance, with an additional domestic hot water circuit for immediate response to hot water demands. All six models are equipped with stainless steel heat exchangers and stainless steel inlet and outlet water manifolds. Models from 35kW up to 120kW.

SILOX

The twin wall concept represented in SILOX cylinders is a combination of two tanks, one inside the other. The production of domestic hot water occurs when the heat from the outer primary cylinder is transferred to the inner DHW cylinder, utilising the full surface area for superior heat transfer and reheat time. Sizes from 140lt up to 1000lt.

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TIDL – insulation solutions for thermal, fire and noise applications

Thermal Insulation Distributors Ltd (TIDL) is the leading Irish distributor of insulation for thermal, fire and noise control applications across commercial, domestic and industrial projects. It provides expert advice and an unrivalled range of products.

Paudie Gillen, Chief Executive Officer, has over 30 years' experience in the insulation industry, and he leads an experienced team of product specialists who can provide solutions to individual insulation requirements, along with technical support and design advice. In fact, service longevity with TIDL is commonplace with various team members being with the company for 20-25 years.

The sales and technical support teams are fully qualified to answer all design and technical questions on thermal insulation values, fire stopping and compartmentation, along with noise control solutions and external insulation and cladding. They also advise on compliance with the Irish Building Regulations Part L Conservation of Fuel & Energy; Part B Fire and Part E Noise.

The TIDL portfolio is extensive and comprises a mix of own-manufactured ranges along with market-leading brands such as Rockwool, Armacell, Paroc, Siderise, Isover, Foamglas, Knauf, Polyseam, Kingspan, Sager and Tarecphen.

Through its own manufacturing division, TIDL offers a unique range of Irish-manufactured products including specialist OEM cut insulation systems, profiled roofing insulation, fire-rated mortar and barrier systems, noise control absorbers and numerous composite insulation systems.

Customised TIDL vessel dome cover.

The National Standards Authority of Ireland (NSAI) has certified TIDL's Quality Management System to IS EN ISO 9001:2015. This is a significant mark of approval as it covers TIDL's entire operation, from the manufacture, sale and distribution of thermal insulation, fire stopping and noise control products through to specialist building products and cut insulation products for original equipment manufacturers (OEM).

The company has five divisions:

- **Thermal Insulation**
  Contact: Philip Mullan and Shaun Gillen.
  E: sales@tidl.ie;
- **Passive Fire Protection**
  Contact: Denis McGill
  E: fire@tidl.ie;
- **Noise Control**
  Contact: Denis McGIll
  E: fire@tidl.ie;
- **Customised Insulation Products**
  Contact: Shaun Gillen;
  E: sales@tidl.ie;
- **Thermal Covers**
  Contact: Barry Cunningham.
  E: sales@tidl.ie;

With its own transport fleet, TIDL covers the island of Ireland with deliveries of insulation and specialist building products to construction sites, builder's providers, manufacturing facilities, hospitals, chemical and pharmaceutical plants, etc.
Contact: Thermal Insulation Distributors Ltd.
T: 01- 882 9990; www.tidl.ie ■

FläktGroup

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FläktGroup Ireland's service and support capabilities cover every cycle in your system's life. From the initial start, through routine operation, maintenance, to system improvement or monitoring. Whatever you need – our service solutions ensure the reliable operation and highest performance of your systems.

The FläktGroup service team provides you an abundance of collective knowledge combined with a deep commitment to the highest safety and environmental standards – this includes adhering to global and regional regulations on energy use and carbon emissions.

FläktGroup Ireland has developed an innovative concept and methodology for high performance buildings designed to help you reach your goals in regards to the four core performance areas:

- Life cycle management
- Energy efficiency
- Occupant health and safety
- Environmental sustainability

Environmentally Compliant

1 TEAM
1 DIRECTION
1 FOCUS

Contact us on (01) 463 4600 or at serviceireland@flaktgroup.com

INDOOR AIR QUALITY

Engineering sector has the solution to droplet (aerosol) transmission

In the context of the current Covid-19 pandemic, the leading European Indoor Environmental Quality (IEQ) associations – covering heating, mechanical ventilation, air-conditioning, lighting, and building automation and control systems – have issued a joint statement that asserts the dangers of indoor air pollution and outlines proposals that would help address the problem. It cites the lack of a coherent EU legislative framework on the matter and proposes adding quality standards and policies to relevant directives and frameworks such as the Energy Performance of Buildings Directive, the Occupational Safety and Health Strategic Framework, and public procurement practices.

The following extracts highlight the key recommendations outlined in the statement in the context of current evidence with regard to droplet (aerosol) transmission and airflow in a room.

Mechanical air renewal

Mechanical ventilation and air-conditioning units should not be switched off. Rather, outdoor air supply volume flow should be elevated to increase the frequency of the replacement of polluted indoor air with outdoor air supply. The greater the number of air changes per hour (ACH) – a measure of ventilation rate – the more any aerosol can be diluted/removed.

Extended operating hours before and after the regular time-of-use should be actively considered. If air humidity control is possible with the mechanical ventilation or air-conditioning system, this functionality should also be used as evidence suggests that in drier environments, Covid-19 transmission increases. Therefore, it is recommended that relative air humidity be kept in the accepted comfort range between 40-60%.

Window airing

In buildings without mechanical ventilation systems and those with insufficient mechanical ventilation, or where the installation of a

mechanical ventilation system is not technically feasible, window airing is supportive but has a limited effect on the dilution of aerosols, depending on the outside conditions (1-2 ACH). Depending on the outdoor weather conditions, window airing might cause discomfort. It can also incur major thermal losses, significantly increasing the energy consumption of buildings.

Air treatment technologies

Air treatment systems, such as UV-C disinfection used in addition to mechanical ventilation, will add to the effect of the ventilation rate significantly (an impact equivalent to an additional 6-10 ACH can be easily achieved) in reducing the concentration of infectious viral load in the air. Recent studies have shown the technology has been proven to inactivate, without exception, all bacteria and viruses against which it has been tested. This includes (among others) those causing tuberculosis, influenza, the common cold and SARS.

UV-C disinfection can also be used inside HVAC systems to keep cooling coils free of infectious biofilm in heat exchangers, to disinfect surfaces and disinfect the air flow. In applications where air recirculation is unavoidable, the use of air treatment technologies is also strongly recommended.

Remote control BAC systems

Existing building automation and control systems (BACS) can monitor indoor air quality (IAQ), adjust air renewal settings to the optimum levels, and enable remote connectivity. This avoids the need for physical presence at locations while having full 24/7 control of the building's HVAC systems. Most of the monitoring, supervising and adjustment of BACS-equipped HVAC systems can be achieved safely and efficiently from remote locations without physical presence. This may help to reduce the time of exposure of service and maintenance staff.

IEQ Associations

EHPA
European Heat Pump Association

EPEE
European Partnership for Energy and the Environment

eu.bac
European Building Automation and Controls Association

EVIA
European Ventilation Industry Association

GCP Europe
European association for building engineering services

LightingEurope

Reduce aerosolised transmission

Indoor air pollution must be fully recognised alongside ambient air pollution as a risk to human health. The recent European Parliament INI on the implementation of the Ambient Air Quality (AAQ) Directives,[1] noted that the EU lacks a coherent legislative framework for addressing indoor air pollution. This has also been recognised in the Commission's *Zero Pollution Action Plan*.[2]

A number of existing EU policies should be used to support reduced aerosolised transmission. The revision of the Energy Performance of Buildings Directive (EPBD), expected in Q4 2021, should be used to mandate the introduction of minimum indoor environmental quality performance standards (MIEQPS) for buildings, including for indoor air quality (IAQ) as a component of overall IEQ. Such minimum performance standards would drive the uptake of mechanical ventilation, air-conditioning and air treatment systems, thereby improving air dilution and reducing aerosolised contamination risk in buildings.

The EU's forthcoming Occupational Safety and Health (OSH) Strategic Framework for 2021/2027 should fully integrate IEQ among the aspects to be considered and regulated by member states in their OSH policies, and in the Commission's model OSH evaluation framework.

IEQ conditionality should also be integrated into public procurement policy by adding/establishing IEQ in green public procurement criteria and in the revision of the Energy Efficiency Directive (EED) in conditionality for purchasing by public bodies. ■

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Panasonic helps restore Belfast Grand Opera House to its former glory

Built in 1895, the Belfast Grand Opera House is one of Northern Ireland's most iconic buildings, designed by prolific theatre architect of the period, Frank Matcham. The venue, which provides a much-loved theatre experience for its visitors, recently underwent a large-scale renovation to update and improve services, including a revamp of its air conditioning with the help of Panasonic.

With a seating capacity of 1,063, the space requires high-performing air conditioning solutions to ensure visitors can fully enjoy the theatre experience with comfort. To meet this challenge, Aircon Sales & Service installed Panasonic air conditioning solutions in the main auditorium, the baby grand studio and the bar areas. In addition, a Panasonic hi-wall split unit, incorporating the unique nanoeX technology, was also installed in the front of house office.

The two existing air handling units were fully refurbished with a total cooling capacity of 230kW, while the main auditorium utilised four 45kW Panasonic 2-pipe ECOi outdoor units, the ideal solution for refurbishments, delivering high energy-saving performance, powerful operation, reliability and comfort.

Furthermore, the baby grand studio utilised two of Panasonic's 25 kW Big PACi condensers – the range is a useful and cost-saving solution with a compact and light indoor body. All six Panasonic condensers and AHU kits have been piped to new DX cooling coils which Aircon Sales & Services have also supplied and installed.

Connor Rooney, Director at Aircon Sales & Service commented: "We've worked successfully with Panasonic for over 10 years now on numerous high-profile projects. With the quality of their systems and unique Panasonic controls logic, we can tailor each application to suit any project. Given the massive scale of the Opera House, we needed a powerful and reliable air conditioning system and Panasonic provided the perfect solution. While initially put on hold because of the Covid 19 pandemic, once we got going late last year it went seamlessly and we handed over the fully commissioned solution a few months later."

"We're delighted that Panasonic has been able to help restore the iconic building in some way," said Vincent Mahony, Panasonic Heating & Cooling Ireland National Manager. "Air conditioning on a project of this size is a big task, but our ECOi and PACi ranges are well suited for the job, thanks to their high efficiency and powerful cooling abilities. With the world opening back up, it's great to know that our solutions are helping to bring the theatre experience back after so long away."

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E: crooney@airconsales.co.uk

Outdoor Panasonic roof-top units at the Belfast Grand Opera House.

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Together for more climate protection

Wilo, and the Wilo Foundation, have contributed €180,000, plus technological support, towards the development of a pilot project in N'diob in Senegal, to provide electricity and other modern technologies, including clean drinking water, to the local community.

The project entails establishing so-called ImpactSites that not only provide essentials, but also support the establishment of self-sufficient organic agricultural communities, independent of imports. The initiative is being done in partnership with Africa GreenTec, a German social enterprise that helps people in the "global south" to achieve more self-determination and growth through sustainable energy solutions.

"Together with our international network partners, we are driving forward future-oriented, climate-friendly solutions," says Oliver Hermes, President and CEO of the Wilo Group. "By signing the UN Global Compact in 2018, we underlined our commitment towards contributing to the international sustainability goals. The project in Senegal is a visible expression of this ambition."

In 2019, Wilo Group was selected by the UN to be part of the exclusive global network "50 Sustainable & Climate Leaders". "Consequently," says Derek Elton, Managing Director, Wilo Ireland, "we are responding to a world full of complex and multi-layered challenges in several ways – both with product innovations and with our active engagement in co-operations and networks. One thing is clear to us: together you can achieve and change much more than alone."

ImpactSites involved a re-thinking of electricity and the development of an intelligent system that withstands the harsh conditions of Africa's off-grid regions that far exceeds today's European standards. It relies on a comprehensive portfolio of products and service solutions such as state-of-the-art solar technology, smart meters, cooling systems, water treatment and internet access.

ImpactSites aim to improve peoples' lives through sustainable electricity and clean drinking water. *Source: Africa GreenTec*

Secure water supply

The secure supply of energy and clean drinking water is one of the major global challenges of our time, especially in the 49 countries of sub-Saharan Africa. As part of its explicit sustainability strategy, the Wilo Group is committed to the goal of providing 100 million people with access to clean water by 2025.

Wilo is sponsoring this ambitious programme in cooperation with the German Federal Ministry for Economic Cooperation and Development (BMZ), the Senegalese government, the community of N'Diob in central Senegal, and with scientific support from the Technical University of Munich.

"We are pleased to act alongside experienced partners and proven experts in order to make a concrete contribution to the well-being of the people in the region," says Derek Elton. "The BMZ has established a conceptual umbrella for the sustainable development of the population with the Marshall Plan for Africa. Through cooperation with partners who are already established locally, such as Africa GreenTec, we offer pragmatic solutions that improve peoples' living conditions, create prospects and minimise the causes of forced migration." ■

From Concept...

Koolair was acquired by Systemair in 2018 and is now part of the Systemair Group which includes - Menerga, VEAB, 2VV & Frico. This acquisition strengthens the Systemair suite of products and enables a holistic design and supply of HVAC equipment.

Koolair is renowned for the design, development and innovation of its grilles and diffusers, which are tested at an in-house R&D and Innovation laboratory.

Systemair Ireland has the full scope of design tools to support the Koolair range of ADP. This includes a modern laboratory, 3D simulations, in-house knowledge of our engineering team and BIM Models. We are by your side to assist you in the selection of grilles and diffusers, from concept right through to project completion.

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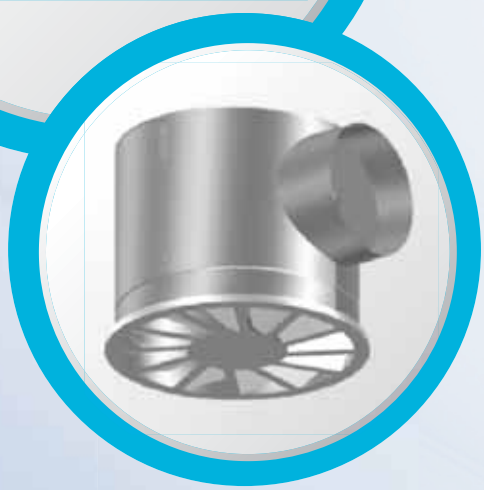

...To Completion

We can model any room to show; airflow **patterns to achieve the best air distribution** and layout, velocity profiles to eliminate drafts and temperature gradients to show comfort profiles.

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KOOLAIR

systemair

Field service digitalisation, from the field to the office, with simPRO

As a simPRO customer for nearly four years, Irish-based HVAC business Solv has seen first-hand the difference end-to-end field service management software can make to business operations, visibility and profitability.

While the business specialises in the heating and installation servicing sector, Solv also provides plumbing, electrical and facilities management solutions. With this diverse service offering and more than 20 staff, Solv knows the vital importance of streamlined workflows, clear communication between staff and efficient processes to enable delivery of exceptional service.

simPRO software offers business easy access to project details.

Switching to job management software

Before implementing simPRO software in 2017, Solv Director Lauren McDonald said the business juggled a combination of different systems to manage operations. While this provided a workable solution in the short-term, as the business grew, the disparate systems and lack of visibility began to cause bottlenecks in workflows.

"We used a bespoke system that was powered by a database platform. We used paper certification and a PDA system powered by Microsoft," said Lauren. "We were finding it more and more difficult to get what we wanted from our software and having to get bolt-on solutions for our requirements was no longer feasible.

"An area that I'm very passionate about is innovation and making technology work for the business, not against it. Before we installed simPRO we used a lot of separate programs to try and move with the times, but it just got too difficult to manage."

It was then that Solv, a business which is passionate about providing accessible and personal service, knew it was time to upgrade their processes. Lauren said there was a variety of features that led the business to choose simPRO.

"We loved the idea of being able to access the software from

Engineer using his laptop on site.

About simPRO

simPRO is a leading field service management software for service, maintenance and project contractors. Connect the office to the field, deliver exceptional customer service and gain invaluable insights with automated processes, streamlined workflows and in-depth business reporting.

A Solv technician working in a boilerhouse.

anywhere," she said, "along with the reassurance our data would be safe and we no longer had to rely on a large server."

Field capability and unique branding opportunities were also a large part of the decision to implement simPRO.

"We were very interested in designing our own forms, so naturally we were extremely excited about eForms which complements simPRO Mobile for our field operatives," said Lauren.

But general capabilities weren't the only things the HVAC business was looking for. Solv was also looking for a solution which was fluid in its development.

She continued: "A big part of our decision was knowing there was a team that works on updates and that the software is ever evolving."

The results

After implementing simPRO, bottlenecks in processes became a thing of the past. However, this was just one of the many benefits Solv experienced. "I find the software has made everyone more accountable for their responsibilities," said Lauren. "Our customers also have a better experience as they don't have to wait for paperwork to feed through to the office."

In addition and as anticipated, the field functionality is benefitting all in the business. "What the field operatives find so great is that all the information for the customer and job requirements is there in the app along with the map tool," Lauren said. "They're able to manage their own stock and the fact they can raise their own order numbers is very useful as it saves both in the field and the office."

"The simPRO software has made everyone more accountable for their responsibilities. Customers also have a better experience as they don't have to wait for paperwork to feed through to the office.

At the same time as Solv implemented simPRO, the business also made the change to accounting software Xero. Solv was able to seamlessly integrate Xero with simPRO, providing a complete field service management solution. "The change for us has been phenomenal, everything is now just so user-friendly and transparent," Lauren said, "and, with everything in one place, we have more visibility of our business than ever before.

"For me it's definitely the transparency and the reporting functions that are the highlight. I have many reports scheduled, daily reports on certain jobs, weekly activity reporting, monthly profit and loss and new customer reports. By having all of our information stored in the software we know exactly where to look if we need certain documentation."

Lauren's word of advice for those considering installing simPRO? "Make the move, you won't regret it. I understand changing software is a daunting task but we have not looked back since our move. We have had, and continue to have, a very positive experience and relationship with simPRO."

To learn more about how simPRO can support your business, visit simprogroup.com ■

AIR GROUP EXPANSION

AIR Group acquires Hoctor Refrigeration Services

In one of the most significant developments ever in Ireland's HVRAC sector, Anglo Irish Refrigeration – now known as AIR Group – has acquired Hoctor Refrigeration Services. Both entities have a pedigree stretching back over 40 years and are the perfect fit. Whereas AIR Group majored in refrigeration, Hoctor Refrigeration majored in air conditioning. They only crossed over to a minor extent, so now their coming together makes for a formidable force in both refrigeration and air conditioning.

Hoctor Refrigeration engineering teams operate 365 days a year and provide excellent back-up service to all customers. Clients can also avail of planned maintenance programmes which are designed for their specific needs. Hoctor Refrigeration's success over the past 40 years has been backboned by their top-quality engineers and a company-wide focus on customer service. Hoctor Refrigeration is a Mitsubishi BSB partner and has long-standing relationships with customers and suppliers across Ireland.

We deliver sustainable refrigeration and air conditioning solutions … sustainably!

Back row: Trevor Wright, Managing Director, AIR Group with Patsy O'Reilly, Director, Anglo Irish Refrigeration and David Donnelly, Director, Food Equipment Solutions. Front row: Fergus Daly, Director, Hoctor Refrigeration and Niall Jones, Director, AIR Group.

Hoctor Refrigeration is synonymous with company founder Liam Hoctor and the takeover came about as Liam was looking to retire. While he will remain in-situ for a transitional period, Fergus Daly, already widely known to both companies and indeed to the industry at large, has been appointed Director, Hoctor Refrigeration Services, to head up the operation.

"It's really a case of more of the same, and even better," says Fergus. "Clients can rest assured that the same high levels of quality service will be maintained, albeit with the added support and input of the vast resources of our parent AIR Group. It also means we have access to the resources of our sister companies in the group, making us a truly one-stop-shop for every conceivable refrigeration and air conditioning requirement across all industry sectors."

Its market standing is reflected in the scale, calibre and diversity of the projects undertaken. These include the high-profile, 310-bed Motel 1 and the boutique Hotel No 7, along with numerous hospital, hospitality, office, leisure and retail projects throughout the country.

In addition, the Hoctor Refrigeration Services design team partners with specifying consultants and their clients to devise the best possible solution incorporating quality products that are regulation compliant, energy efficient, sustainable and deliver best value for money.

AIR ANGLO IRISH REFRIGERATION · FES FOOD EQUIPMENT SOLUTIONS · AIR GROUP · PRS PORTGLENONE REFRIGERATION · HRS HOCTOR REFRIGERATION

Anglo Irish Refrigeration

AIR Group is Ireland's only contractor offering solutions for refrigeration, air conditioning and food service equipment.

The company designs, supplies and installs all types of Air Conditioning and Ventilation Systems, Commercial Refrigeration, Chillers and Freezer Rooms, Ovens and Cooking equipment across the Island of Ireland. AIR Group has a full network of Service and Maintenance teams with engineers located throughout the 32 Counties of Ireland.

Food Equipment Solutions

Food Equipment Solutions (FES) was established to provide a dedicated service for all market segments of the retail food sector. FES consults with clients as to their specific needs and then devises a customised solution that also acts as a profit centre for their business.

Areas covered include ventless cooking equipment; food prep; cooking; hot and cold displays; refrigeration; storage; cleaning; innovation; and preventative maintenance.

Portglenone Refrigeration

Portglenone Refrigeration was formed in 1988 and has since become one of the leading refrigeration and air conditioning companies in Northern Ireland.

Acquired by Anglo Refrigeration in 2006, it strengthened the company's all-Ireland coverage and the growing Portglenone team of service, maintenance and installation engineers now provide top-quality work to leading group retail companies as well as numerous independent stores.

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District heating to play bigger role in Ireland's carbon-neutral future

Ireland has taken a significant step closer to a zero-carbon future with the commencement of excavation works on the country's first ever large-scale district heating system which is set to harness excess heat from the Amazon web services data centre in Tallaght, *writes Kevin Devine, Sales Director, Xylem Water Solutions*, Ireland.

Currently, district heating and cooling represent a maximum 0.8% of Ireland's heat consumption[1] – a long way from its target of 10% of all buildings to be connected to district heating sources by 2030[2].

With a growing number of data centres placing a huge demand on the national grid, a more sustainable solution had to be found. Data centres currently represent 11% of Ireland's electricity grid capacity and that figure is projected to rise to almost 30% by the end of the decade[3]. Furthermore, if all other data centres proposed for Ireland are given the green light, their energy use would comprise 70% of capacity in 2030.

Harnessing available heat

District heating systems, like the one currently under construction in Tallaght, offer the opportunity to reuse the energy being consumed so voraciously by data centres (the 26-hectare Amazon site being developed in Mulhuddart, Co Dublin, will consume an estimated 4.4% of Ireland's total energy demand by 2026[4]).

The district heating scheme, which will begin supplying heat in 2022, will reduce carbon dioxide emissions in the South County Dublin area by nearly 1,500 tonnes per year in its first phase alone[5]. Initially, it will provide heat for a number of South Dublin County Council's buildings and the TU Dublin-Tallaght campus, with plans to connect other public, private and residential customers in the Tallaght area to the network in subsequent stages.

In Dublin, it is estimated there is enough waste heat to heat one million homes[6] – meaning harnessing the extra heat generated by data banks, and any other industrial source, provides a sustainable way forward for all countries in the future.

Amazon's new system will initially heat 47,000sq m of public sector buildings, 3,000sq m of commercial space, and 133 affordable rental apartments. Using the thermal energy it produces represents a significant contribution to its pledge to be net zero carbon by 2040, with new projects making it the largest ever corporate purchaser of renewable energy[7].

This low-cost, low-carbon approach can extend far beyond district heating. Investing in quality energy-efficient solutions with sustainability at their core for existing buildings can offer the potential to rapidly recoup costs.

A professional audit of every building system can uncover dated technology, poor design or shoddy installation, anything that may hinder the performance of the system. Experienced engineers can identify inefficiencies – for example, oversized heating systems which can use 50% more energy than necessary.

The opportunities to improve the efficiency and sustainability of our buildings' assets are vast. Buildings no longer need to account for almost a third of the world's carbon emissions[8], or a fifth of its water usage[9]. Upgrading systems to run at peak efficiency can mean huge energy and cost savings, and make them more resilient.

For more information on smart district heating and cooling technology visit www.xylem.com/en-ie ■

District heating systems offer the opportunity to re-use the energy being consumed so voraciously by data centres.

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Desiccant vs condensing dehumidifiers – when to use one over the other

There are two main types of commercial dehumidifier – condensing and desiccant. They both lower humidity but do so in quite different ways, which frequently determines when you should use one instead of the other. Here Damien Power, Ireland Area Sales Manager, Condair, (right) compares dehumidifier technologies and gives an overview on best practise dehumidifier selection.

A condensing dehumidifier operates using the basic principle of creating a cold surface upon which moisture from the air will condense. It incorporates the type of refrigeration circuit found in a fridge or AC unit. Air is drawn into the dehumidifier with a fan and meets the cold coil evaporator element of the fridge circuit. Its temperature is reduced below dew point, causing condensation to form on the coil, from where it drips to drain or into a water tank for disposal. The cold air is then heated with the condenser part of the fridge circuit before being returned to the room, drier and slightly warmer than it entered the dehumidifier.

A desiccant dehumidifier operates using the adsorption properties of a rotating desiccant wheel, a bit like a sponge literally soaking up moisture directly from the air. Air is drawn into the dehumidifier and passes through a slowly-revolving desiccant wheel. The desiccant absorbs moisture and the dried air is returned to the room. In order to allow the desiccant wheel to indefinitely absorb moisture, the wheel passes through a regeneration area, where it is heated by a secondary hot airstream. A heater, frequently electric, heats this secondary airstream to around 120°C before passing it through the wheel. The hot air absorbs the moisture from the desiccant and is then vented externally.

So, a desiccant dehumidifier has two airstreams – a process airstream and a regeneration airstream, which exhausts the moisture collected from the process airstream. As the freshly-regenerated part of the wheel is hot, it carries some residual heat when it rotates back into the process airstream. Therefore, as well as drying the process airstream, the desiccant wheel also provides some heat.

Selection

As a condensing dehumidifier relies on temperature to dry the air, the technology is most efficient when

Condair condensing dehumidifier.

the atmosphere is warm. The warmer the room, the greater the condensation effect on the dehumidifier's cold evaporator coil. This makes this type of technology ideal for applications like swimming pools, where the air is typically very warm and moist, especially, as some condensing dehumidifiers can incorporate heat recovery systems, which return the heat generated from the drying process to heat the pool water.

If the atmosphere requiring dehumidification is lower than around 20°C, frequently desiccant dehumidifiers start to become a more efficient solution. Their efficiency of operation is not temperature dependent, so they perform well in both warm and cold environments. However, this flexibility comes at a cost, as they do use more energy than condensing systems, due to the heating required to regenerate the desiccant wheel. In comparison, a condensing system would typically consume 0.5-1.5kW to remove one kilo of water, while a desiccant would consume 1-3kW for the same capacity. It is possible for a desiccant dehumidifier to incorporate a gas or hot water heat exchanger, which can reduce the cost of this energy consumption.

Due to the need to vent the regeneration airflow externally, to get rid of the hot wet air coming off the desiccant wheel, desiccant dehumidifiers can also be more complicated to install. A condensing dehumidifier can dry an atmosphere with only an electrical supply and a drain. A desiccant dehumidifier will always need ducting to vent the regeneration airflow away from the area being dried.

Temperature not only factor

So, with the higher energy costs and the more complex installation requirements involved in desiccant dehumidification, if a project's environmental conditions suit a condensing dehumidifier, it will normally be the most cost-effective solution. However, temperature isn't the only determining factor. Condensing dehumidifiers are very effective at maintaining an atmosphere as low as 45-50%RH. If a project calls for a humidity level below this, desiccant technology offers more powerful drying performance. A desiccant dryer can deliver extreme environmental control as low as 1%RH. This is ideal for manufacturing processes, such as lithium battery production, where very low humidity levels are needed.

Condair desiccant dehumidifier.

Effectively managing the heat generated during a drying project can also be a determining factor in technology selection. If close environmental control is needed in a project, this nearly always involves both temperature and humidity levels. Although the dehumidifier's purpose is to control humidity, both technologies will heat the air they dry. This means they have an impact on the temperature management and will need to align alongside any associated heating and cooling equipment.

Flexible solution

Again desiccant technology offers a more flexible solution for temperature management, as it is possible to fit pre- or post-modules to a desiccant dehumidifier that can additionally heat or cool the air. There is the possibility with some advanced condensing systems to incorporate remote condensers, which can exhaust the heat air away from the process air delivery. This can provide control over heat management but not to the precise levels offered by desiccant technology.

In summary, for projects that need humidity control at 45%RH or above and at around 20°C or warmer, condensing dehumidifiers can be the most cost-effective solution. While applications that drop below this temperature level, even for short periods of time, or that need less than 45%RH, or advanced temperature management, desiccant dryers offer a much wider performance range.

See also www.condair.ie .

EURO GAS LTD

Euro Gas embarks on new development phase

As Euro Gas approaches its ruby (40th) anniversary, it's appropriate that it is undergoing yet another strategic development phase. The injection of new blood and fresh ideas has been the hallmark of Euro Gas down through the years and this year is no exception. After almost 25 years of unstinting service to Euro Gas, Martin Garvey, former Managing Director and majority shareholder, has decided to step away from the business to enjoy the finer things in life, with Denis O'Keeffe, James Porter and Kieran Cowman acquiring the business.

As with all such developments at Euro Gas, this has been a carefully-planned process to ensure a gradual and seamless transfer of ownership while, at the same time, ensuring total continuity of service and project delivery. Indeed, Denis and Kieran have almost 40 years' service between them with Euro Gas while James represents the injection of "newer blood", being with the company five years.

The same applies to the main staff complement. Longevity of service is very common at all levels, and across various roles. Meanwhile, new members have also come on board to help deal with the ever-expanding order book and growing portfolio as new product categories and product types come on stream.

That said, Euro Gas is not merely a product distributor but a full service provider of design-led, integrated heating and hot water system solutions for commercial applications, covering everything from offices and hotels through to leisure centres, gyms, hospitals, schools, etc. Both new-build and retrofit are fully catered for, with NZEB compliance and all that this entails the primary objective.

Euro Gas shareholder Directors James Porter, Denis O'Keeffe and Kieran Cowman.

Product portfolio

- Boilers
- Heat pumps
- Water heating
- Air heating
- Radiant heating
- Air dirt separators
- Flue gas exhaust systems
- Unit heaters
- Door curtains
- Gas detection
- Plate heat exchangers
- Heat interface units

Peter O'Brien appointed Sales Director

In keeping with the injection of new blood and fresh thinking, Peter O'Brien has just joined the company as Sales Director. A qualified building services engineer, Peter is widely known and respected throughout the building services engineering sector, having held key senior roles with some of the industry's market leaders.

His experience encompasses all technology types and takes in commercial boilers through to air handling units, CHP units and commercial heat pumps. He will work closely with consulting engineers in his new role to help them devise renewable solutions that are the most appropriate for the particular project concerned.

Renewables and design advice

The emphasis on renewables has been fully embraced by Euro Gas with its extended portfolio of boilers, heat pumps and water heaters incorporating innovative features and state-of-the-art technology. A full suite of complementary accessories is also available.

That said, when devising commercial heating and hot water solutions, Euro Gas carefully assesses what will work best for each particular project. It does not shoe-horn products or systems into a solution simply to tick the related regularity compliance or grant-approval box, but rather proposes a holistic solution that is the most appropriate for that specific project

In addition, Euro Gas goes to great lengths to work closely with consultants and facility managers to devise each solution, and also to help educate the client as to the best way forward for a truly sustainable result

Packaged plantrooms

With the packaged plant room concept now firmly established as the preferred method of construction for certain situations, Pak Plant is Ireland's leading provider of off-site solutions. Pak Plant offers either standard units or custom-designed complete packaged plant rooms, and is expert at creating tailor-made solutions for challenging projects.

All plant rooms are designed and built in Ireland and can be supplied as skid-mounted units to allow incorporation into existing building structures. Pak Plant's design team has a wealth of experience across the entire building services spectrum and works closely with specifiers, contractors and clients to devise the best solution

Spares and service

As part of the holistic service provided by Euro Gas, a team of fully-qualified and experienced engineers is available to attend on site to offer technical advice and guidance during installation. A full commissioning service on all products and systems is provided to ensure that they are correctly set up according to the manufacturer's recommendations.

These service engineers are strategically located throughout the island of Ireland and are supported by local service engineers who are fully qualified and have been trained in all aspects of commissioning and fault-finding by both Euro Gas and its principal supply partners.

Euro Gas also carries extensive stocks of spare parts to ensure no delays and to eliminate unnecessary downtime.

Euro Gas Ltd
Southern Cross Business Park,
38B Boghall Road, Ballymorris, Bray, Co Wicklow.
Tel: 01 – 286 8244 Email: sales@eurogas.ie

www.eurogas.ie

Addressing disturbing noise characteristics in HVAC systems

Noise levels from ventilation systems has become an increasingly pressing topic in recent years, and an onus is now being placed on manufacturers, system designers and contractors to safeguard acceptable internal noise levels for occupant comfort, *writes Glen Plunkett, Acoustician with iAcoustics.*

Noise from mechanical and electrical equipment can be disturbing and fatiguing, and may interfere with the functionality of a space and the productivity of those who occupy it. Most new building projects in the commercial, educational and healthcare sectors strive for BREEAM, LEED and WELL accreditations which are very much in line with the push for sustainability and energy efficiency. Part of the green-movement package rightly includes basic requirements for indoor comfort levels which embraces acoustics and noise control as a key component.

The background noise level requirements for internal spaces are typically specified in terms of a maximum permissible dB(A) level measured over time, or by using the Noise Rating (NR) curve. The reason for using one or the other, or both, may be justified in the project documentation.

Regardless of which single-figure parameter is used as a performance indicator for internal background noise levels, none provide a means by which the subjective quality of the operational noise source(s) can be addressed. It follows that two different ventilation systems in two separate rooms can achieve the same noise level yet

sound completely different to each other.

The Association of Noise Consultants (UK) attempts to address this in a simplified way for specification and commissioning purposes by imposing a 5dB penalty for noise with disturbing characteristics. This, however, implies that a noise source with a disturbing character may become acceptable by making it quieter, which is often not the case. Most attempts to coin a performance indicator for disturbing noise characteristics from HVAC systems have proven to be unfeasible for everyday use.

Types of problems

Disturbing characteristics of HVAC systems typically include noise that is tonal, intermittent or impulsive in operation or that emits a distinctive "hum". Such characteristics have been shown to increase the subjective prominence of a noise source when compared to steady-state noise at the same level. If we consider two meeting rooms for example, one which achieves NR30 with a distinguishable "hum" from the fan coil unit, the other room achieving NR35 with no distinct acoustic characteristics, people may well find the former to be more annoying even though the actual background noise level is lower.

Glen Plunkett is an acoustician with iAcoustics, a company with a proven track record in M&E design consultancy that has designed systems down as low as NR17. It conducts noise transmission calculations using standardised guidance contained in ISO 12354-5, and also the procedures recommended in CIBSE Guide B4 to demonstrate compliance with the project criterion.

Acoustic specification

Acoustic specification for internal background noise levels tend to set out a maximum permissible level not to be exceeded under normal operating conditions. Not all specifications or project criteria set out a design aim on account of the acoustic quality of the system(s), stating that all systems must not emit any disturbing characteristics, including noise which is tonal, intermittent or impulsive in nature.

In the absence of such a design statement, disputes can arise at the commissioning stage because the contractor was only required to achieve a specified noise level, irrespective of providing a "good-sounding" system. It is less problematic if the client and contractor agree that the acoustic quality HVAC system will be addressed at the design stage. Furthermore, it may be difficult to justify the presence of a distinct acoustic feature because of the lack of standardisation and guidance in this area.

Designing M&E systems to sound good

It is common for system designers to meet a specified NR curve which defines a set of maximum permissible frequency values for a specified NR value. However, this does not imply that the design achieves a pleasant noise profile. CIBSE proposes that a better alternative is to design to a target spectrum which falls with frequency to around 5dB/octave to provide a more balanced sound.

The first step is all to do with layouts. If a mechanical unit is to be suspended off the ceiling void within the space, what impact does the unit breakout noise have on the space below and on adjacent spaces? Where can fan coil units and duct runs be placed to minimise noise impact?

Careful selection of equipment on account of the frequency spectrum of the unit follows closely. Ventilation elements such as fans, grilles and diffusers with a well-balanced noise spectrum should be considered with equal importance to the overall noise level output.

There are many practical solutions available to minimise potentially-disturbing characteristics and it is advisable to seek the advice of an experienced acoustic consultant. ■

Keeping school airspace free of germs

The most recent research on COVID-19 suggests that airborne transmission through aerosols is the main route of spreading for the disease.

This form of transmission means that it is essential to use "forced individual ventilation" – such as S&P extractors and air supply units – in enclosed spaces, especially classrooms, to clean the outside air and so increase the quality of the indoor air and considerably reduce the risk of infection.

S&P products on the windows or walls in a classroom (or small commercial premises and offices) ensure that clean outside air will replace the polluted air inside to create an environment free of infection.

Opening windows for a few minutes before and after classes does not ensure adequate indoor air quality.

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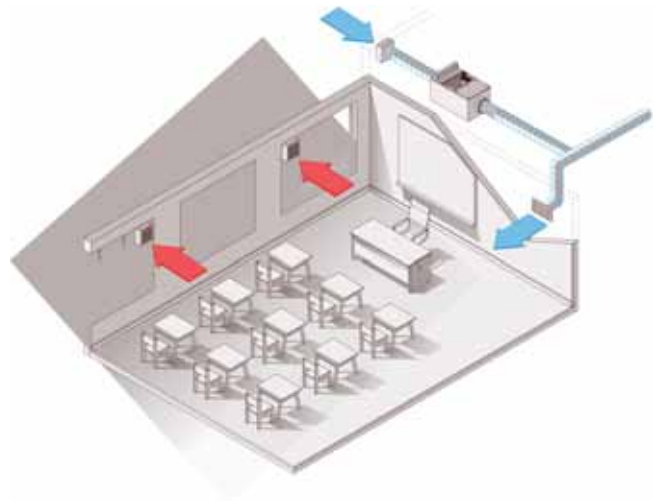

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- Filter replacement indicator • RH% and room temperature

E: sales.ie@solerpalau.com *T: 01 412 4020*

Service solutions with FläktGroup

With indoor air quality now being more important than ever before, FläktGroup provides systems and service to ensure an optimum working environment.

Heating, ventilation and air conditioning (HVAC) is generally responsible for a significant proportion of total building energy consumption. A typical system accounts for approximately 40% of total building consumption and 70% of base building (i.e. landlord) consumption. One immediate saving that can be realised is upgrading old belt-driven fans to direct-drive plug fans which can result in savings of up to 30%. Refurbishing AHUs, chillers and other HVAC units can equally result in significant energy savings. It can also prolong the life of the equipment and reduce carbon emissions.

The key characteristics of the service provided

- Highest quality components;
- Innovative technology and intelligent control systems to satisfy heating or cooling requirements and to ensure optimum clean air delivery to give our clients and their workforce peace of mind when returning to the office.

Equipment provides

- Optimal corrosion protection;
- Compliance with the highest industry hygiene standards;
- Energy reduction;
- Guaranteed long-term performance;
- Easy handling and maintenance.

Services provided

- All equipment now comes with energy monitoring and integrated control, which can be interfaced over BACnet or Modbus;
- FläktGroup provides HVAC equipment energy surveys with full report and estimation of annual cost savings and payback;
- Replacing of old equipment such as computer room close control (CRAC) units which normally run 24/7, with high efficiency invertor MulitDenco units, can have a 1-2-year payback;
- Replacing only inefficient AC fans can have savings of up to 70%;
- Retrofitting heat recovery in the ventilation system can instantly save up to 86% on heating bills;
- Upgrading chillers to high-efficiency invertor units or installing FläktGroup's integra 4-pipe simultaneous heating and cooling units, not only dramatically reduces energy bills but can also have huge savings on equipment and installation costs.
- Fläktpack. As the name suggests, it is a flat-pack of components for projects where there is restricted access. AHU'S can also be built on-site.

Energy efficiency and sustainability

As people spend most of their time indoors, energy efficient and intelligent ventilation systems are more important than ever. Natural ventilation could be argued to be the best solution. However, the paradox is that outdoor air might not be clean and the building structure may not allow for natural ventilation solutions. Property owners often turn to environmental certification programs such as LEED and BREAM to future-proof their investments, to create more attractive space with increased rental income, and to project a community-friendly corporate image.

As energy efficiency and sustainability is at the core of the FläktGroup offering, and the company has a proven track record in these fields, it can meet this exacting criteria. Further endorsing this ability is the fact that all FläktGroup equipment is Eurovent Certified. Choosing FläktGroup products and systems is an assurance that the solution devised will deliver the best possible functionality, combined with the least possible environmental impact. It will also have been tested according to all relevant international standards and will be fully supported by both the FläktGroup sales and technical teams.

Contact: Tony Reynolds,
Service Sales Manager.
T: 01 – 463 4600;
E: tony.reynolds@flaktgroup.com

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DAVIES

Davies are delighted to provide a solid partnership for the Domus Ventilation brand.
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Key features

- Non-combustible as set out in Approved Document B (fire safety)
- 204x60, 220x90 and 220x126 size options
- Low resistance
- Compatible with Domus Rigid and Thermal ducting range
- Air brick powder coating pre-qualified to EN13501-1 classification A2-s1, d0
- Air brick material 1.5mm galvanized steel, fire class A1 'no contribution to fire'

CPD
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UNTIL 2023

With the changes in building regulations, Domus Ventilation offers a **FREE CIBSE approved CPD** which runs through building regulations and how the new non-combustible air brick can integrate into your projects.

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Heating installers – no option but to fit a filter

Fitting a filter can improve the performance of a heating system, increase the lifespan of the boiler, reduce energy use and cut bills. This is more important than ever with so many people currently staying at home. Laurence Cox, Commercial Manager at Baxi Potterton Myson, details why it is so important that heating engineers explain to their customers the benefits of having a filter fitted.

The Baxi 800 boiler system.

Why fit a filter?

The combination of metals, water and oxygen can result in corrosion and the build-up of debris, preventing hot water from flowing freely through the system. This in turn can prevent radiators from heating up properly so they take longer to warm the home, and cause damage which can lead to costly boiler breakdowns.

Filters are designed to clean the heating system using a magnet which collects any magnetite flowing through the pipework. The debris is collected in the sleeve of the filter while water is spun in a cyclone through it, helping any non-magnetic debris to be collected in a separate part of the unit.

While a filter plays an important role in maintaining a healthy heating system, it does not replace the need to flush the system, using an approved cleaner, and treating the water with an inhibitor.

The ADEY system filters out magnetic particles in the heating system.

Servicing a filter

Filters should be serviced every year, at the same time as the boiler is serviced. Show the homeowner how much debris has been collected to help them understand how it is improving the efficiency of the system. The ADEY filter won't reduce flow rate when full, but will stop collecting debris, so a service is essential to maintain performance.

Unscrew the bottom over a bowl, releasing any water in the filter. Next, use the filter spanner provided to remove the magnet, along with the debris, which can then be washed away. Finally, carry out an inspection of all the seals and rubber 'O' rings to make sure they are clear of particles and undamaged or the filter could leak. Top tip: be sure to have a spare seal kit with you, just in case a replacement is needed.

In addition to reducing efficiency, one of the key issues with debris build-up is that it often isn't covered by insurance and can void existing boiler warranties. So, if the heat exchanger is blocked with debris, it could lead to expensive repairs.

Contact: Baxi Potterton Myson. Tel: 01 – 459 0870, or visit https://www.baxi.co.uk/our-boilers ■

All-in-one chiller from Carrier

The AquaEdge™ 19DV centrifugal chiller from Core Air Conditioning Ireland integrates Carrier's latest advanced technologies such as EquiDrive™, ceramic bearings, pioneering falling film, SmartView™ control and many other features detailed here, along with the benefits they provide.

EquiDrive™ compressor – The advanced back-to-back two-stage compressor design naturally balances both radial and axial thrusts on a single shaft and features a simplified system with 30% less hardware, reducing mechanical losses. Dual IGVs and precise VFD control ensure stable operation at all times, even down to 10% part load. This multipoint control delivers a broad operating envelope while maintaining the highest level of efficiency in the harshest conditions.

Ceramic bearing system – The refrigerant lubrication for the ceramic bearing system deals with oil-related failures and cuts down maintenance expense. Cutting-edge manufacturing technologies ensure that ceramic bearings are the ideal solution for this kind of lubrication, which includes high-nitrogen steel with excellent toughness, a ceramic rolling element with smooth surface and a glass-fibre reinforced PEEK cage. The simple structure with less hardware means more reliable operation at all times.

Falling film evaporator – The pioneering Carrier falling film evaporator designed for low pressure refrigerant increases heat transferring efficiency by 15% by mitigating the submergence effect in flooded type. The 3D hatched tubing also reduces the heat transfer resistance optimally. The efficiency deterioration caused by oil also disappears;.

SmartView™ – The SmartView™ control provides a convenient way to collect and utilise chiller information for data analysis. The Carrier lifecycle data management system further provides more details and offers opportunities to continuously optimise the chiller or the system operation. The black box records all the data 15 minutes before and one minute after a serious alarm occurs.

The AquaEdge™ 19DV centrifugal chiller from Core Air Conditioning Ireland.

Hermetic structure design – Designed for 25 years of effective operation, the Carrier semi-hermetic compressor and refrigerant-cooled hermetic motor eliminate the risk of refrigerant leakage from the shaft seals and also prevent the potential failures caused by coupling design.

Greenspeed™ inverter technology – Carrier Greenspeed™ inverter technology gives moment-to-moment control to the compressor speed that matches the changing building load with precision and ensures that the chiller is always operating with optimal efficiency at either full or part load. Therefore, the 19DV chiller achieves the part-load efficiency of up to 11.8 IPLV.IP under AHRI conditions, which cuts operating costs.

User-friendly interface – Equipped with a 10.4" high resolution coloured touch-screen, 19DV chillers can deliver comprehensible information in a very efficient and secure manner for the smooth running of daily activities and periodic maintenance. This is possible due to the intuitive menu, animated component level interface with timely running data, graphic trending, auto-pushed alarm mail, smart password and more than 10 language choices.

Remote connectivity – The multiple access methods for remote control present the user with a flexible way to monitor and control the chiller at any place and time. The chiller is compatible with Modbus, BACnet and LonWorks and the display can seamlessly connect with the building automation system or the i-Vu control network.

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PART 4

Digitilisation will make learning easier to digest

Author: Paul McCormack,
Belfast Metropolitan College Innovation Manager

This is the fourth offering in the series of six articles specifically designed to inform, assist and signpost the built environment to embrace and engage on its digital transformation journey. The first part of the series focused on the digitalisation pathway and digital tools, including BIM, that the industry could avail of. The second part of the series (Articles 4, 5 and 6) will look at navigating the pathway to secure the skills advantages to avail of the commercial opportunities that digitalisation offers.

If industry is to develop and leverage its digital skills for energy efficient construction, and increase its competitiveness, it will be driven via the skills of the workforce. Upskilling must be demand-driven … demand both from the industry perspective and from the workers in the industry. It is this "meeting of demands" that will lead to success in meeting the needs of industry, society and the environment.

Demand needs to be addressed at three different levels :

(1) Industry – which is profit driven;
(2) Learner – skills mobility driven;
(3) The sector – energy reduction driven.

It is evident from our work that the approaches of many EU initiatives are not interlinked and can, at times, be on opposite faces. So, our challenge is to align all three and harness these in delivering a successful cohesive demand. Stimulation of demand for sustainable energy skills from a learner's perspective is completely different from that of the industry and overall sector need. However, in ARISE (see page ••) we are aligning these and aimimg to create a multilateral inspiration.

How can we stimulate the skills demand necessary to meet industry needs and deliver the energy savings the sector requires?

We can improve market demand and increase the energy performance of buildings by untapping the huge latent potential of the construction workforce through stimulus and reward. Digitalisation is a game-changing strategy that will empower the construction sector to thrive and deliver the expertise for sustainable energy skills. This will be the tool to stimulate demand. There is a direct correlation between digitalisation and energy efficiency as highlighted at the IEA energy efficiency conference in June 2019.

Why?

Most of the issues related to low demand for skilled workforce are due to:

(1) Lack of a widely-recognised and accepted international scheme of certified qualifications for sustainable construction and sustainable energy skills;
(2) Lack of awareness and uptake by the industry of new methods and digitalisation;
(3) Lack of mandate or incentive by public authorities for the use of such skills.

The digital push is accelerating and, even if construction industry players are still confused and hesitant about the change and new technologies, the time has come for them to develop their digital skills in order to achieve and make their sustainable energy skills more effective.

Our society is in transition, leaving behind the old energy ineffective, material-wasting and not always healthy built environment, and moving towards an energy efficient, healthy and material sustainable built environment. At the same time, digital technology is transforming our lives at an accelerating pace. Digitalisation can be disorientating – standard contexts and work processes that we are all used to are changing. Technologists call this "context collapse".

On the other hand, digitalisation is recognised by those implementing it as a powerful enabler to enhance the effect of their work and as an enrichment of their professional skills. Social interactions and workplaces are changing, and will change further. This is also the fact for upskilling interventions. Due to digitalisation, learning will become easier to access, digest and utilise.

We need to be conscious that sustainable and lean construction is already a reality, but we do not have sufficient skilled professionals and workers to make it become a "normal practice." Furthermore, client and users' awareness and implementation drivers are still lacking (factors which are crucial to increase market demand).

Governments, particularly in the EU, are increasing their CO2 and energy

Paul McCormack with O'Hare McGovern staff who completed the BIMcert training programme.

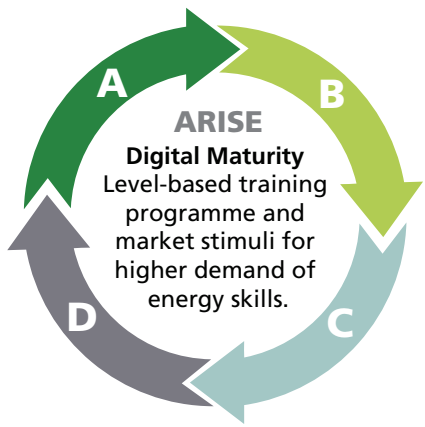
efficiency regulations and raising their targets, following the EU strategies and policies for decarbonisation of the construction sector and approaching NZEBs. Digitalisation, going hand-in-hand with energy skills, provides a great opportunity to reduce the environmental impact of construction projects. Digitalisation makes the energy skills of the construction workforce more effective and easier to improve. It also provides confirmable effects in rational and smart use of materials and energy.

Digital technologies allow the collaboration of all stakeholders in a collaborative digital environment that is the information carrier of a building's material, environmental and energy properties. Currently we are at the "liminal" stage between the old and the new (liminality comes from the Latin limen, meaning doorway or threshold).

We need to upskill ourselves and society in order to step through the doorway and successfully harvest the benefits in order to address the skills decline. Construction sector employees are also at the liminal threshold of energy transition and digitalisation. In order to successfully stimulate the demand for sustainable energy skills we need to nudge and assist employees to adapt digitalisation and apply it in the context of energy skills.

New patterns

Skills delivery and results must be focused on the development of new patterns to replace the old ways of learning and to form new patterns that demand, stimulate, encourage, unite and assist. We need to provide reassurance that the sustainable digital construction skills transition is supported, clear and identifiable. In order to raise awareness and recommend actions, activities and outputs in training and skills delivery must change to assist and educate the user and industry, therefore



"Push & Pull" demand driver approach.

A: Upskilling scheme; Training access; Accreditation; Validation; Support; Awareness.

B: New norm; Market benchmark; Increase driver demand.

C: Public administration/professional bodies mandate.

D: Further need; Demand stimulus.

further increasing skills demand across the spectrum.

This "skills transformation" process can be achieved using digitalisation and the certification of "step-by-step" competences recognition as an accelerator to empower demand for energy skills.

How?

Unifying digital and energy construction skills and qualifications into an EU-wide recognisable and acceptable construction certification scheme will stimulate demand and also support organisations with delivering quality.

Digital construction (digitalisation), big data and BIM in particular, support sustainability trends in the construction sector, especially the increasing requirements for energy efficiency competences and applicable skills.

Solving the problem of upskilling AEC professionals in digital construction (inc. BIM) requires an holistic approach to sustainable energy. Also, stimulating the demand for sustainable construction and energy skills workforce are closely connected. Recognising that symbiotic, self-generating loop between need and delivery must stimulate the demand by offering a more efficient pathway to upgrading the BIM skills of construction professionals.

Unified programme

A unified programme for sustainable construction qualifications needs to be developed in order to enhance wider market recognition; more intensive demand and more stimulating support must be provided by/and for policy and regulatory frameworks. The result will be a skilled and qualified AEC sector workforce executing works that will help achieve the sustainable energy performance of buildings. Digitalisation is both a skill and a tool. However, people are the true enablers. It is they who will make change towards enegy efficiency possible. ■

Calpeda Tech Talk

Pump selection made easy

Configuring a product before purchasing it, choosing the model, optional accessories and additional features with just a few clicks – this has become a habit in our daily lives. It is now a useful and interesting opportunity, even when the product in question is not a car, or an item of clothing, but a building product such as a pump to be installed in a system or inserted in a design.

In that context, Calpeda has developed its pump selector software to put consulting engineers and other specifiers at the hub of pump system design.

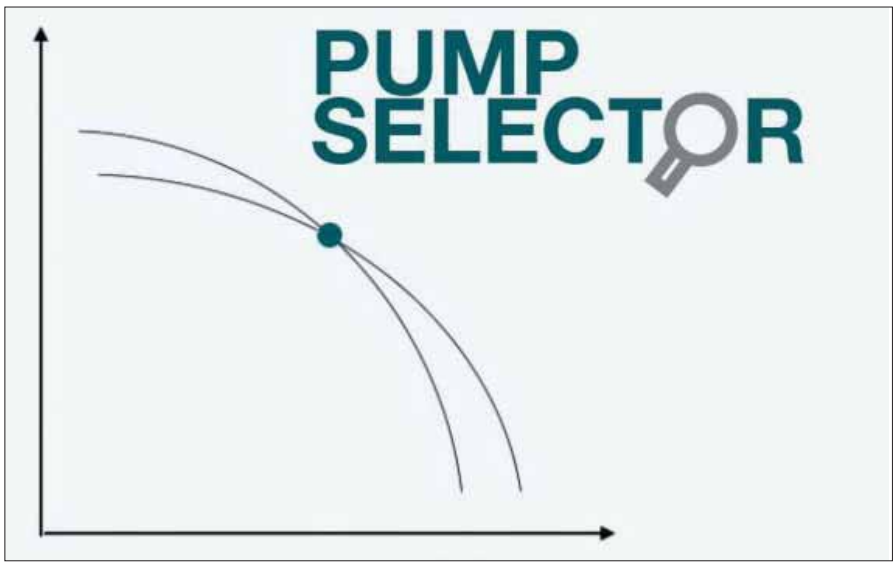
It is not a question of doing the system design or of replacing the advice of the company's technical team. It is more a question of offering a tool that allows individuals to autonomously find the most suitable pump for specific projects and particular applications.

The advantages are evident, starting from time management. The pump selector is available 24 hours a day, so users can configure easily from their own personal device, gaining immediate access to all the necessary information.

How does it work?

The starting point when selecting the ideal pump for a given application is the hydraulic characteristics, in other words the flow rate and the head. After indicating where the pump is to be used, the pump selector chooses the models that are best suited to the required performance. Each pump has its own individual characteristic curve, namely a graphic representation of the relationship between the flow rate and the head.

An important consideration is that the curve created by the *Calpeda Pump Selector* considers hydraulic performance, so it is much more specific than the curves published in the catalogue.



The configurator also makes pre-selection possible. In addition to flow rate and head, users can indicate the application field, the pump family, the frequency and motor phases, and the pump body material, all of which helps reduce the list of selectable models.

Selection and customisation

The step after selection is model personalisation. The configurator allows users to modify a series of elements, updating the pump curve accordingly if performance progress is influenced. If, for example, the pump is estimated to be oversize, the impeller diameter can be decreased, so containing energy consumption and associated costs.

The impeller and shaft material can be chosen according to the application and type of fluid to be moved by the pump. The type of mechanical seal can also be personalised, and a higher IP rating than the standard one can be evaluated.

Clients can choose the voltage, and the pump selector calculates the motor current to allow correct sizing of switchgear.

In addition, the motor winding can be tropicalised so as to make it more suitable for use with an inverter. This treatment, which is standard for pumps of a certain power, is also available for smaller pumps on request.

Having been guided through the pump selection process, the result is the ideal configured pump, together with its technical data sheet (in Pdf format and downloadable) and the related 2D and 3D drawings.

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E: graham@calpedaireland.com


What happens next to the elephant is inevitable …
… however, what's about to happen in the building services engineering sector is much harder to predict. Thankfully, *Building Services Engineering* can help you do that with a wealth of news, feature articles, expert opinions and detailed product information.
Don't leave yourself out on a limb like our elephant friend.
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Panasonic Aquarea spearheads quiet revolution

Left: The Baxi 800 [illegible] system.

With people spending more time at home, the benefits of having a quiet heating and domestic hot water system have become more obvious. Panasonic's Aquarea heat pump range makes this possible.

In addition to low sound levels, it delivers high-performance heating and hot water along with significant energy cost savings.

According to independent tests, the Panasonic Aquarea J Generation R32 Mini Monobloc range and 16kW Bi-Bloc T-Cap Super Quiet air-to water heat pumps have impressively low levels of noise when in operation. The testing was carried out by the Danish Technological Institute in Denmark with results confirming that the new Aquarea Monobloc 5kW, 7kW and 9kW Super-Quiet Bi-bloc 16kW T-CAP Aquarea air-to-water heat pumps have market-leading low noise levels of 60dB(A) while operating at full load.

The tests were carried out for the sound power level according to EN 12102-1:2017 for Full Load, Quiet Mode 3 at A7/W55. In quiet mode operation, Aquarea heat pumps can operate at a further 4dB(A) reduced noise level.

Aquarea A2W heat pumps are proving popular with developers, system designers and installers looking to provide highly-efficient heating and hot water, while also providing homeowners with a reliable system offering long-term energy savings.

Walter Stephens, Air-to-Water Product Specialist for Panasonic Heating & Cooling Solutions Ireland, added, "We are delighted by the recent findings of these test results. We knew the units were quiet but now independent results confirm the Aquarea as a market leader for low noise and quiet operation.

"Considering people are spending more time at home and there is a big push for more renewable heating and cooling solutions, issues such as noise levels are of the upmost importance. Aquarea delivers on both performance and efficiency and, with a wide range of units to choose from, there is an option available for most project needs."

Along with low noise levels, the new Aquarea R32 monobloc has MCS SCoP figures of 5.07 along with CoP figures of 5.57.

"Aquarea Super Quiet 16kW T-CAP (total capacity) delivers outstanding efficiency in heating and domestic hot water supply," says Eamonn Kent, Panasonic Air to Water Key Account Manager. "This unit can supply all the heating and domestic hot water to a 450sq m new-build property. It can be used in tandem with radiators, underfloor heating and fan-assisted radiators to deliver heating in the winter. Dedicated cooling can also be provided during the summer, if required. The wide range – from 3kW to 16kW in monobloc, bi-bloc or all-in-one – ensures the right model is available for all requirements and designs."

Pansonic inverter outdoor unit.

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Eamonn Kent. T: 087 – 439 4032;
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DOMESTIC HEATING SYSTEMS

It's all about balance

Noisy radiators, uneven heat, using too much energy … all installers have experienced these common complaints from customers. But there is an easy way to deal with all of them by using hydronic balancing, the Grundfos way.

Hydronic balancing – easier said than done

Until now, to balance the system, installers have had to rely on manufacturers' standard settings, refer to generic tables, or base balancing on experience or recommendations from radiator or TRVs manufacturers. The result is that many heating systems do not operate efficiently. In fact, recent research (CO2online, 2017) shows that 82% of heating systems in existing buildings in Germany alone were incorrectly balanced.

Basic or insufficient hydronic heating system balancing can frequently become the installer's headache when home-owners look for a solution for uneven heat and poor comfort in their home.

Different impacts of system balancing

In condensing boilers, excessive operation can cause a rise in return flow temperatures due to loss of condensing, making the system less efficient. The introduction of hydrogen boilers will compound this issue in the future as fuel will not be so cheap.

For heat pumps, flow temperature needs to be as low as possible to minimise energy costs and maximise performance.

Increasing flow velocities also increases the circulation pump's energy consumption, as well as flow noise inside thermostats and radiators.

The solution to all of these issues is correct balancing, but traditionally that's been a time-consuming process, requiring the advanced measuring and adjustment of each valve – something few installers have time for.

Grundfos 5-step hydronic balancing

System balancing with Grundfos requires that the circulator installed in the heating system is one of the following: ALPHA2 (with ALPHA Reader accessory), ALPHA3, UPM3 LIN. Installers also need to download the Grundfos GO Balance app, which is available on iOS and Android.

The app works in a range of heating systems, including two-string radiator systems and underfloor heating systems, both with pre-set valves, and can balance any of them easily in just five simple steps.

1. Download and open the Grundfos GO Balance app;
2. Start the balancing – the app goes through the hydronic balancing process step-by-step;
3. Add measurements – for each room in the home add room specifications, radiator specifications and Q+H measurements;
4. Balance each room – when measurements are completed adjust each heat emitter according to the calculated target flow;
5. Get the report – when the hydronic balancing is completed, documentation to support what has been done is issued.

Once a system is properly balanced, customers not only enjoy better indoor comfort, but also save as much as 20% on their annual energy bills.

Contact: Grundfos. T: 01 – 408 9800; E: salesireland@sales.grundfos.com ■

Global supply chain is the weakest link

The global supply chain and logistics industry has always been somewhat of a mystery, except to people who work in it. Consumers and end-users of goods and products have regularly neither known nor cared where their goods come from, or how they get to them. From just-in-time manufacturing to Amazon Prime's guaranteed next day delivery and everything in between, people have become used to getting what they want, when they want it, be that from traditional bricks and mortar options or by a click of a button on-line.

However, over the last 18 months, this has changed dramatically to the point that the global supply chain and logistics is now front and centre in the minds of most c-suite level executives. It has also been afforded headline news by the world's mainstream media, *writes Brian Murphy, Ocean Product Manager, Expeditors** (inset).

So how did this all come about?

Asia is the manufacturing capital of the world and within that, China is the dominant player. In the early 19th century, Napoleon is reported to have said "China is a sleeping giant. Let her sleep, for when she wakes, she will move the world." While Napoleon's prediction took almost 200 years to come to fruition, he was ultimately right. Over the last few decades, China has changed from being a sleepy agriculture-based country to the second largest economy in the world. This phenomenal rise is mainly attributed to investment and growth in its manufacturing sector, which in turn has fuelled its export-driven economy.

In early 2020, as the Covid-19 outbreak started to grip China, the Chinese Government announced that it would extend the annual Chinese New Year holiday, planned from 25 January to 1 February, into February. This was ultimately extended again into March and, for six to seven weeks, factories lay idle and production and exports were minimal. Just as China exited lockdown in mid-March, most of the western world was entering lockdown. Large numbers of buyers cancelled or deferred orders with their Asian suppliers.

Shipping lines reacted quickly and decisively to the massive reduction in demand by removing capacity from the market. Services from Asia were

suspended, and vessels were parked up. In addition, due to travel restrictions, airlines stopped flying most of their aircraft with international flights being more severely affected. There was a real and genuine fear of a global recession – we were in very new and uncharted waters.

Over the course of the next few months the behaviour of people in the western world changed. Humans are, in the main, social creatures, but that social outlet was taken away by a series of lockdowns. No longer could they spend their money in restaurants, bars and cinemas or on holidays and foreign travel. Instead, they started to spend their money, and a lot of it, on products and goods.

People who could no longer go to the gym bought home work-out equipment. Working from home meant there was a need for a new home office. Having to spend more time in your home and garden led to huge numbers of self-renovations and improvement projects.

This sudden surge in spending caught everybody off guard. Wholesalers, retailers, logisticians, shipping lines and manufacturers, who were largely Asian based, were not expecting such an uptake in demand so quickly after a potential global recession.

Lack of containers

As demand took off, shipping lines reinstated services from Asia but there was one major problem – there was a severe lack of containers in Asia to meet the demand. As mentioned earlier China, and indeed most Asian countries, have export-driven economies. While they do import goods, their exports far outweigh their imports so empty containers need to be positioned back to Asia to meet the export demand. When services ex-Asia were suspended, it also meant there was no return voyage several weeks later containing the much-needed empty containers.

The lack of containers led to backlogs and bottlenecks in Asia and, in so accordance then with the laws of supply and demand, freight rates for containers ex-Asia rose sharply, by up to 1,000%. When the cargo did move, it arrived into ports in Europe and the USA that were working in a new Covid era of rules and regulations. Staffing levels were reduced, partly due to sickness from Covid and partly due to having to work in smaller crews because of social distancing. Strict cleaning regimes were implemented in between crew changes.

This all led to vessels taking longer to offload and congestion within the ports which ultimately meant that it took even longer to get the containers back to Asia to deal with the next round of exports – a vicious cycle was created that still hasn't been broken.

To further complicate things, in late March 2021, the *Ever Given*, one of the largest container ships in the world, got stuck in the Suez Canal, the main artery that connects East to West from a shipping point of view. The media dubbed it "The Billion Dollar Ship" due to the value of the contents loaded in its containers onboard and "The Ship That Broke Global Trade".

Notwithstanding the dramatic headlines from the media, the blockage of the Suez Canal in terms of global trade was hugely significant. In the six days that it took a team of expert salvage operators to free the vessel, approximately 400 more vessels were significantly delayed – freight rates rose again.

It's also important to note that Covid hasn't gone away. While here in Ireland things are starting to get back to some sense of normality, not every country in the world is in the same position. In recent months. Both Vietnam and Malaysia have endured their own long and strict lockdowns. There have been sporadic outbreaks and lockdowns in several parts of China, most notably in Shenzhen, that saw the port effectively closed for almost four weeks. To put this into perspective, Shenzhen is the world's fourth largest port, having handled just shy of 14 million TEU (twenty-foot equivalent units) in the first half of 2021 alone.

Solution not so simple

So, surely the solution is to make more containers and use more ships? Unfortunately, it's not quite as simple as that. Over 90% of all new containers are built by three Chinese-based companies. These factories were closed during the initial lockdown in China which led to backlogs on orders. Despite them ramping up production since, they simply cannot keep up with the demand. From a container vessel point of view, all available vessels are in service.

Shipping lines have ordered new vessels in the last 12 months but they will not be built and in service until 2023 at the earliest. It is also worth noting that even if there were vessels available, it wouldn't necessarily make sense to put them into service in a network that is severely congested and has huge bottlenecks – they would only add to the problem.

Communication is key

The consensus is that the current global supply chain challenges will remain in the market until at least Q4 2022. To try and mitigate these challenges there are some things that can be done. There needs to be more collaboration between manufacturers, importers, distributors, contractors and logistics companies – communication is key. Lead times should be increased, both from a production point of view and from a transport perspective. Most important, possibly, is that budgets need to be reviewed. Prices will continue to remain high for both freight and raw materials. This will pass but, in the meantime, it's all hands on deck! ■

* Expeditors' menu of core services offers full-spectrum support for an array of industries and for the unique logistics challenges they present. From wholesale global logistics to specific supply chain enhancements, all services are supported by leading-edge information technology systems operating on a single, global operating platform.

COVER STORY

Get wind policy right and we'll become energy exporter

Recent coverage of tight energy supplies in Ireland is a useful reminder of the need to speed up the deployment of renewable power to ensure a more secure supply of electricity, ***writes Noel Cunniffe, CEO, Wind Energy Ireland.***

While concern is understandable, it is important to be clear that the lights will stay on this winter. While speaking recently to Oireachtas members, Mark Foley, CEO of EirGrid, which manages Ireland's electricity transmission system, reassured them that "people can sleep in their beds at night and be satisfied they will have electricity".

As a former EirGrid employee myself, I know the organisation takes nothing more seriously than ensuring that, when you flick the switch, the lights come on. I believe the immediate risk to our electricity supply is passing but this does not mean we should become complacent.

There are three main reasons why energy security has become such a challenge in recent months.

First, because of a number of global factors, the international price of gas has risen rapidly in recent months, up 200/300% over last year. While wind energy provided around 38% of Ireland's electricity in 2020, most of our power still comes from gas. So, when the price of gas rises internationally, we are especially vulnerable.

Second, two of Ireland's most efficient and largest gas generators have been offline for repair for most of the year. This means we have had to rely on older and less-efficient generating plant. These charge more for the power they produce and they are already buying gas at much higher prices.

Finally, while wind energy had, to the end of September, provided almost 30% of Ireland's electricity for the year to date, this was down on last year. The more wind on the system, the less we rely on imported fossil fuels and the lower the price of electricity on the wholesale market, which is the biggest factor in electricity bills.

Solutions at hand

If all of this sounds a bit ominous, the good news is that the solutions are also at hand. The immediate fix is to get the two offline generators, Whitegate in Cork and Huntstown in Dublin, back working. Both are expected to be fully operational by the end of November and this will have an immediate positive impact on both the price of electricity and the security of our supply.

The more long-term solution is that we must reduce our reliance on imported fossil fuels for our electricity and accelerate the shift to renewable energy and supporting technologies like battery storage. We need our own secure source of electricity, generated and used here in Ireland, and to reduce our vulnerability to what will be an increasingly expensive gas market in the years to come.

Now for where the news gets really good. Ireland has some of the best wind energy resources in the world and a growing pipeline of projects, both onshore and offshore, that are moving through the development process. Specifically, the development of offshore wind energy is accelerating and we are working to deliver 5,000MW by 2030. To put that in context, the highest level of demand ever on the island of Ireland electricity system is just under 6,900 MW.

The Programme for Government has a long-term ambition for 30,000MW of offshore wind energy off our west coast. This would be much more than enough to meet all of Ireland's future energy needs. That volume of electricity generation would make Ireland a major net exporter of electricity to other European markets. Put simply, we have more wind energy available than we will ever need for our own domestic purposes.

But as well as developing wind energy, we also need a more diverse supply of electricity. We cannot rely on wind alone. Next year will see grid-scale solar energy projects start to come online for the first time. This is particularly important because the times of year when wind levels are low, from July to August, are the times when solar energy generation is at its best.

We also need to see battery storage projects connect to the electricity grid. These can store wind and solar power when there is more renewable energy available than there is demand. We can then use this power for short periods at times during the day when there is peak demand for electricity. This is a cheaper alternative to using fossil fuels and has the advantage of being low to zero carbon.

We already have around 350MW of battery storage on the system and another 1,500MW with planning permissions waiting to be built.

Gas generation

However, none of this means that we will have gas off our electricity system anytime soon. The Irish Government's target is to have up to 80% of our electricity coming from renewable energy by 2030, which means the rest will come from gas generation. This will help to provide stability and a secure electricity supply as we move towards a zero-carbon electricity system in the early 2030s.

We know we have the projects. We have the investment, private and public, to develop the renewable energy and the infrastructure we need, and we can do it at a good price for the electricity consumer. As more and more of our power comes from Irish renewable energy and we have to rely less on imported fossil fuels, our electricity supply will become more secure and we will be insulated from rising gas prices.

In the coming years we need to accelerate not only the development of renewable energy, but also the recruitment and training of engineers and heat pump installers to deliver the ambition for 400,000 retrofits by 2030. They can then do their jobs confident in the knowledge that their colleagues in the renewable energy industry, and those responsible for Ireland's electricity system, will deliver. ■

Noel Cunniffe, CEO, Wind Energy Ireland.

New £1.12million European digital construction project

ARISE Project to drive skills development

Belfast Metropolitan College recently unveiled ARISE, its new £1.12 million European digital construction project which is designed to change the face of delivery and recognition of sustainable energy skills in the construction sector. ARISE's mission is to support the twin transition of the construction sector and to contribute to the European Recovery and Resilience Plans 2021-2027.

Louise Warde Hunter, Principal and Chief Executive of Belfast Met.

"ARISE reinforces Belfast Met's commitment to engage in international partnerships and applied R&D, working in innovative ways with industry to meet the emerging skills needs of the economy at home and abroad.

awakening | relevant | innovative | scalable | equitable

ARISE will revolutionise the learning process by monetising skills development and learning exchange with a digital system based on skills recognition rather than accreditation. The training and transaction system developed by the project will reward learners as they achieve competence at a certain level with the crypto currency for skills exchange – CERTcoin – the innovative currency of skills and learning of the construction sector embracing today's digital transformation benefits.

This reward, based on skills and time credits, will be stored in an Individual Learning Account and can be used as digital points accumulation, for example in a skills barometer or for exchanging it into valid certificates. It will be an easier-accessible, less time-consuming and still competitive way to up-skill the industry, as well as the market demand side such as public administration, clients and owners.

The nine partners in the project consortium are: Belfast Metropolitan College, Northern Ireland; Technological University Dublin, Ireland; Institute for Research in Environment, Civil Engineering and Energy, North Macedonia; ISSO, Netherlands; Conseil des Architectes D Europe, Brussels; IBIMI Institute for BIM, Italy; Building Changes, BV, Netherlands; Copenhagen School of Design and Technology, Denmark; and Instituto Superior Technico, Portugal.

At the introduction event Belfast Met Innovation Manager and ARISE Programme Manager, Paul McCormack, outlined the challenges and objectives for the 30-month programme. Louise Warde Hunter, Principal and Chief Executive of Belfast Met also addressed the audience, saying: "Today's ARISE launch reinforces Belfast Met's commitment to engage in international partnerships and applied R&D, working in innovative ways with industry to meet the emerging skills needs of the economy at home and abroad."

Among the other speakers was Ms Jennifer Boyer, Vice President of Sustainability, TU Dublin, which is one of the European partners on the project which has Belfast Met as the lead partner. Ms Boyer said: "The ARISE project creates a positive impact by addressing real world challenges in the construction sector through the upskilling of individuals to reach their infinite potential. ARISE leverages learning post-Covid by offering bite-size educational units through a digital mobile curriculum to enable learning opportunities that are both accessible and sustainable in our daily lives." ■

Martin Lennon, Director, O'Hare McGovern (OHMG), said: "The early involvement of OHMG with BIMcert was the platform that escalated our BIM journey, ensuring we remained at the forefront of digital innovation. We are delighted to once again join with BMET, and their international partners, at the start of their ARISE project journey. The result of this partnership will ensure that OHMG has a skilled workforce with the knowledge, experience and competencies to deliver the desired energy and carbon reduction targets on every project we take on."

Energy savings of €41.5 million

SEAI Awards acknowledge sustainability drivers

Top prize of Energy Team of the Year has gone to Dún Laoghaire Rathdown County Council in this year's SEAI Sustainable Energy Awards. The South County Dublin local authority improved its energy performance by 51% in 2020, compared to the baseline year of 2009. It continuously improves energy efficiency and carbon reduction through its ISO 50001 Energy Management System and has set an example for other local authorities who wish to create sustainable, cost-effective and zero-carbon towns and villages.

Duncan Stewart, this year's recipient of the Outstanding Contribution to Sustainable Energy Award.

A total of ten awards were presented to individuals, businesses, communities and public sector organisations to mark their commitment and dedication to sustainable energy and climate action.

In all, 26 finalists were shortlisted for the SEAI Energy Awards 2021 with projects delivering combined energy savings of €41.5 million.

The winners were announced via an online ceremony that also included a discussion with Minister for the Environment, Climate and Communications, Eamon Ryan TD, and Duncan Stewart, this year's recipient of the Outstanding Contribution to Sustainable Energy Award.

Details of all the winners are as follows:

Outstanding Contribution to Sustainable Energy: *Duncan Stewart*

Duncan Stewart has been a champion for environmental and architectural conservation since his student days. He has been a popular television personality in Ireland for nearly 30 years where he promoted energy conservation, quality Irish craftsmanship and sustainable materials and design to a mass audience.

More recently, his involvement as producer and presenter on *Eco Eye* is driven by his interest in the protection of the environment, Ireland's biodiversity, and supporting local communities and the communication of climate issues.

Emerging Sustainable Energy Champion: *Paddy Shanahan*

At only 12 years of age, Paddy Shanahan is already well known as a dedicated and passionate climate activist. David Attenborough's *Galapagos* documentary and a school trip to Dublin Zoo were his inspiration to take a great interest in sustainability and tackling climate change. He joined his Green Schools Committee and went on to win a prize at the INTEL Mini Scientist Schools' Competition.

Energy in Buildings: *UCC Tyndall National Institute*

The Tyndall National Institute upgraded a protected structure constructed in 1903 to a high energy performance building. The goal was to promote core values of wellness and sustainability, and encourage scientific interaction. Smart building technology was a key component of the design and smart sensors were used in the lighting, along

Dermot Byrne, Chair, SEAI with Eamon Ryan, TD, Minister for the Environment, Climate and Communications.

with demand-control on heat, light, power and ventilation. Energy use is also monitored in real time. The building achieved an A rating without the use of renewables.

Excellence in Energy Research: *GlasPort Bio*
GlasPort Bio is an SME based in Galway that has developed a solution to allow greater use and reuse from waste agricultural materials. Its GasAbate product is added to stored slurry to reduce greenhouse gas emissions and increase biogas production following anaerobic digestion. The product has the potential to reduce national emissions and enhance the renewable energy output of slurry.

Innovative Deployment Renewable Energy: *Falls Hotel & Spa*
The Falls Hotel & Spa is a family-run hotel at the gateway to the Burren UNESCO Geopark in County Clare. Installing a hydro-electric turbine on the river adjacent to the hotel has provided the hotel with up to 70% of its annual electricity requirements since 2018. In March 2021 the hotel was declared a carbon neutral property by Green Hospitality and awarded the GreenMark recognition.

Inspirational Energy Community: *Inishowen SEC*
Established in January 2019, Inishowen Sustainable Energy Community (SEC) is the result of a collaboration between Inishowen Development Partnership (IDP), Inishowen Co-Op, Donegal County Council and a diverse range of stakeholders across the Inishowen community. Their vision is that the Inishowen Peninsula will be carbon neutral by the year 2050 and the Inishowen SEC has ambitions of becoming a renewable energy centre of excellence.

Large Business Exemplary Energy Performance: *Pfizer Grange Castle*
The Pfizer site at Grange Castle is the company's first to clearly outline plans to achieve carbon neutrality. Since Pfizer's energy programme was introduced in 2012, it has evolved from an engineering-led system to an organisational wide programme. The diverse range of projects and initiatives achieved by Pfizer Grange Castleis is an excellent model for any large business looking to tackle its own energy outputs.

Leadership in the Public Sector: *An Post*
An Post has committed to net zero carbon emissions from its operations by 2030, with a 50% reduction in carbon emissions by 2025. By the end of 2021, An Post will have approximately 1,000 electric vans in use with sustainability entrenched as the guiding principle for transformation within the business.

Small and Medium Business: *KORE Insulation*
Over the past five years, KORE has implemented major reforms in reducing its energy demand and carbon emissions. KORE Insulation participates in many retrofit schemes across the country and has also implemented a range of energy saving measures in its own factory. It has set a goal to achieve net zero carbon emissions by 2030. ■

> **The awards were presented to individuals, businesses, communities and public sector organisations to mark their commitment and dedication to sustainable energy and climate action.**

LEDVANCE road and parking lighting

LEDVANCE has extended its range of LED luminaires, advanced LED lamps, intelligent smart home and smart building solutions with a new package for road and parking lighting called Streetlight Flex.

Available with two beam angles, three light colours and seven LED configurations, the Streetlight Flex range offers a matching solution across a wide variety of applications. These include parking areas and motorised traffic areas (M Class); conflict areas (C Class); and pedestrian and low-speed areas (P Class), according to the European road lighting standards (DIN) EN 13201. Delivering 1650lm to 24450lm, the LED lamps are available in colour temperatures of 27000K, 3000K and 4000K with efficiency ratings up to 155lm/W.

The Streetlight Flex family provides energy-saving solutions across applications where uniform light distribution is crucial, whether for streets, car parks or outdoor urban areas. Options include small, medium and large luminaires, all with a choice of two uniform light distribution patterns.

Models RW25ST are designed for normal roads with single side placement, 1m overhang and up to 10° incline of the luminaire head. These units provide ideal illumination for rectangular parking areas in front of the pole, while the RW35ST version enables two-sided installation with offset luminaires, and caters for dual carriageway roads up to 17m wide using 10m poles.

The Streetlight Flex luminaires can be mounted in either a side-entry or post-top positioning. There is the additional option of adjusting the luminaire head's angle by +/– 15° without opening the luminaire.

Other possibilities include adapters for 76mm diameter poles and reduction adapters for 46mm cantilever arm masts.

Installation is simple and the mains connector box provided ensures tool-free, fast and convenient installation. LEDVANCE lighting solutions come in environment-friendly cardboard packaging with all relevant product information immediately visible on the outside of the box.

Contact: Stevie Young, LEDVANCE Ireland. T: 086 – 600 1291; E: s.young@ledvance.com ■

The new Streetlight Flex range of road and parking lighting from LEDVANCE.

Enhance your career prospects ...

Join CIBSE Ireland

CIBSE Ireland promotes the careers of building services engineers by accrediting courses of study in higher education. It also approves work-based training programmes and provides routes to full professional registration and membership, including Chartered Engineer, Incorporated Engineer and Engineering Technician.

Whether a student member or fully qualified, CIBSE offers a range of services, all focused on maintaining and enhancing professional excellence throughout your career.

CIBSE members in Ireland are represented by an active Regional Committee that organises an extensive programme of CPD events, technical evenings, training courses, awards and conferences. The programme also includes social events such as the annual golf outing and the annual Christmas lunch.

CIBSE Ireland membership means you can avail of all these events and activities. You also get direct online access to CIBSE's full range of design guides and other publications.

Email: contact@cibseireland.org

www.cibseireland.org

SLL CONFERENCE

Shaping light for health and wellbeing in cities

The aim of the forthcoming SLL online conference – 16 and 17 December 2021 – is to investigate the multi-faceted consequences light has on life in cities. Contributions from participants will support the collection of evidence on indoor and outdoor lighting impacts on health and wellbeing. They will be analysed considering their various domains (medicine, social sciences, urban and lighting design, urban planning, ethics, etc) and included in the development of tools and policy guidance to support the decision-making processes, ensuring the integration of health and wellbeing domains in urban lighting plans.

See https://www.enlightenme-project-conference.com/

A major consequence of urbanisation is an exponential increase of human exposure to electric light at night. Public outdoor illumination and the artificial sky glow created by highly-urbanised areas are the main sources of exposure. This is complemented by increasing exposure to light at the individual level through domestic lighting and light-emitting screens, or too little exposure during the day due to shift work or unregulated lifestyles.

Buyers, manufacturers, regulators, local authorities and end-users all have a vested interest in high-quality, long-lasting, energy-efficient LED products. The qualifications here are very important. It is the performance of the LED that determines the financial, energy and carbon savings. However, it is important to understand what LED failure means before we begin to discuss performance.

The consequences of inappropriate and disruptive light exposure, generated by the urban environment, profoundly affects people's health and wellbeing, altering the circadian rhythm. These effects cannot be overlooked, especially when they affect vulnerable populations like older adults who very often suffer disproportionately.

Light also shapes urban spaces and social life, thus influencing peoples' behaviour, moods and sense of security, as well as social relationships, easing or hampering socialisation and participation in civic life.

Although public awareness of light-related health and wellbeing issues is increasing, there is less understanding of how health impacts derived from urban lighting are mediated by social inequalities present in cities that may determine the kind and amount of light that citizens are exposed to. Brief details of the various sessions are as follows.

Session 1

This session will present papers and presentations focused on urban modelling and spatial statistics for lighting, health and wellbeing. Presentations will cover specific applications of multi-domain urban modelling tools, big data analyses and "Smart Cities" approaches for urban wellbeing using socio-economic and health geospatial data, examples of urban studies on geospatial data for lighting, and lighting detection from satellite data, drones and luxmeter for high resolution and prospect analysis.

Light shapes urban spaces and social life, thus influencing peoples' behaviour, moods and sense of security, as well as social relationships, easing or hampering socialisation and participation in civic life.

Session 2

Urban lighting is shifting from a largely technical and engineering matter to being understood as involving complex connections between the technical and the social that municipalities need to understand better. Topics covered will include:

- How can lighting better support social goals such as inclusion, equality, diversity and quality of life, particularly for older citizens?
- How can we better understand the citizen issues and social life as a basis for better urban design, including lighting?
- How can ENLIGHTENme research connect with and contribute to wider currents in social lighting and night-time design, both in academic and professional practice?
- How can innovation in lighting technology, control systems and urban design contribute to wellbeing?

Session 3

This session will comprise papers/presentations focused on citizen participation in public space design, including a concern with research and design as social interventions.

Session 4

People are born with a certain genetic make-up. This make-up makes them more or less sensible for environmental effects and exposure. Some of the questions to be posed are:

- What is currently known about the effects of genes and environment on health, wellbeing and circadian rhythms?
- Are the effects of the environment (e.g. lightning) extra strong for older people?

The session will also show the latest findings in the field of genetics with respect to circadian rhythm, along with innovative ways to study the environment by using an environment-wide approach.

Session 5

Even if there is an increased concern about the effects of exposure to artificial lighting on health and wellbeing, it is not considered enough in the current urban policies. Instead, urban lighting policies suffer from a sectorial approach, mainly oriented to reducing energy consumption and CO2 emissions, as well as improving urban safety or strengthening city branding.

Human health and wellbeing implications due to urban lighting is a topic that remains rather unexplored in current urban lighting plans.

The aim of this session is to emphasise innovative urban lighting policies and plans, good practices and pilot actions embracing diversified goals among which wellbeing and health promotion is compromised.

Session 6

Urban lighting interventions pose ethical challenges for the impact on communities and the environment. This is particularly true when we consider the ethical implications posed by electric lighting to human health. This session will map out and analyse some of the ethical concequences.

It will also unravel another aspect of research on health and urban lighting which is the tension between the benefits of open data and approaches that comply with high standards for data protection and GDPR compliance in the collection, handling and sharing. of health data. ■

Urban lighting plans must include health and wellbeing considerations.

THE OBTUSE ANGLE

PAT LEHANE

O'Shaughnessy goes … to come back

John O'Shaughnessy has taken up a two-year assignment in Daikin's Brussels office as Section Manager for Sales Operations & Business Development for Commercial Products in Europe.

John has played an instrumental role in the growth and development of Daikin in the Irish marketplace, first as the heating team lead and then the whole sales team. This assignment in Europe is designed to equip him with the skills to bring Daikin to the next level on his return.

Congratulations John, and here's wishing you a fruitful, and enjoyable, sojourn in Brussels.

Practice makes …

As I stood on the first tee at the CIBSE Ireland annual golf outing doing the photographs as the teams went out, I caught Ciaran Moody and Fergus Daly scuttling back from sneaky practice on the driving range..

Still, they say that practice makes perfect and, to prove the point, Fergus went and hit a magnificent tee shot on the 15th and was convinced he had won the holiday voucher for nearest the pin.

Not to be outdone, Ciaran promptly hit an even better drive to within 1.6m of the hole, thereby depriving Fergus of his victory, not to mention the holiday voucher. Fergus may have moved to pastures new but Ciaran still had to have the final say!

Some accountability please

While the €858 million allocation under Budget 2022 to the Department of the Environment, Climate and Communications is undeniably a positive move, it would be great to see a requirement for incremental, evidence-based updates showing progress (or otherwise) over the coming years.

Ireland has consistently made funding and grant allocations for various environment-driven initiatives over recent decades yet, other than general soundbites, detailed information on what worked and did not work is hard to come by.

We need honest, post-implementation debate on these initiatives, especially when they involve such vast sums. It is not a case of apportioning blame where the hoped-for results fall short, but rather an opportunity to genuinely learn from our mistakes. Indeed, the best learning outcomes very often come from an honest appraisal of our failures.

So, yes please to more and more investment in green and sustainable initiatives, but please also include progress reporting and accountability for those responsible for the spend.

Homer toasts Mona and James

Great to see two of the industry's leading lights celebrate their wedding day recently. As you can see, Homer sent a special greeting to Mona to welcome her into the Duff fold!

Me? … why I'm an *ingeniator!*

Two leading academics in the UK claim that the term engineer has been cheapened by being applied to repair trades. They have each, separately, called for a new job title, one suggestion being *ingeniator*.

Apparently, the Spanish term is *ingeniero*; the German *ingenieur*; the French *ingénieur*; and the Norwegian *ingenior*. All of these words come from ingenius or ingenuity, so hence the suggested *ingeniator*.

Would *ingeniators* make a better fist of the energy, carbon and climate change challenge? … you never know.

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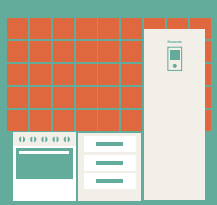

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